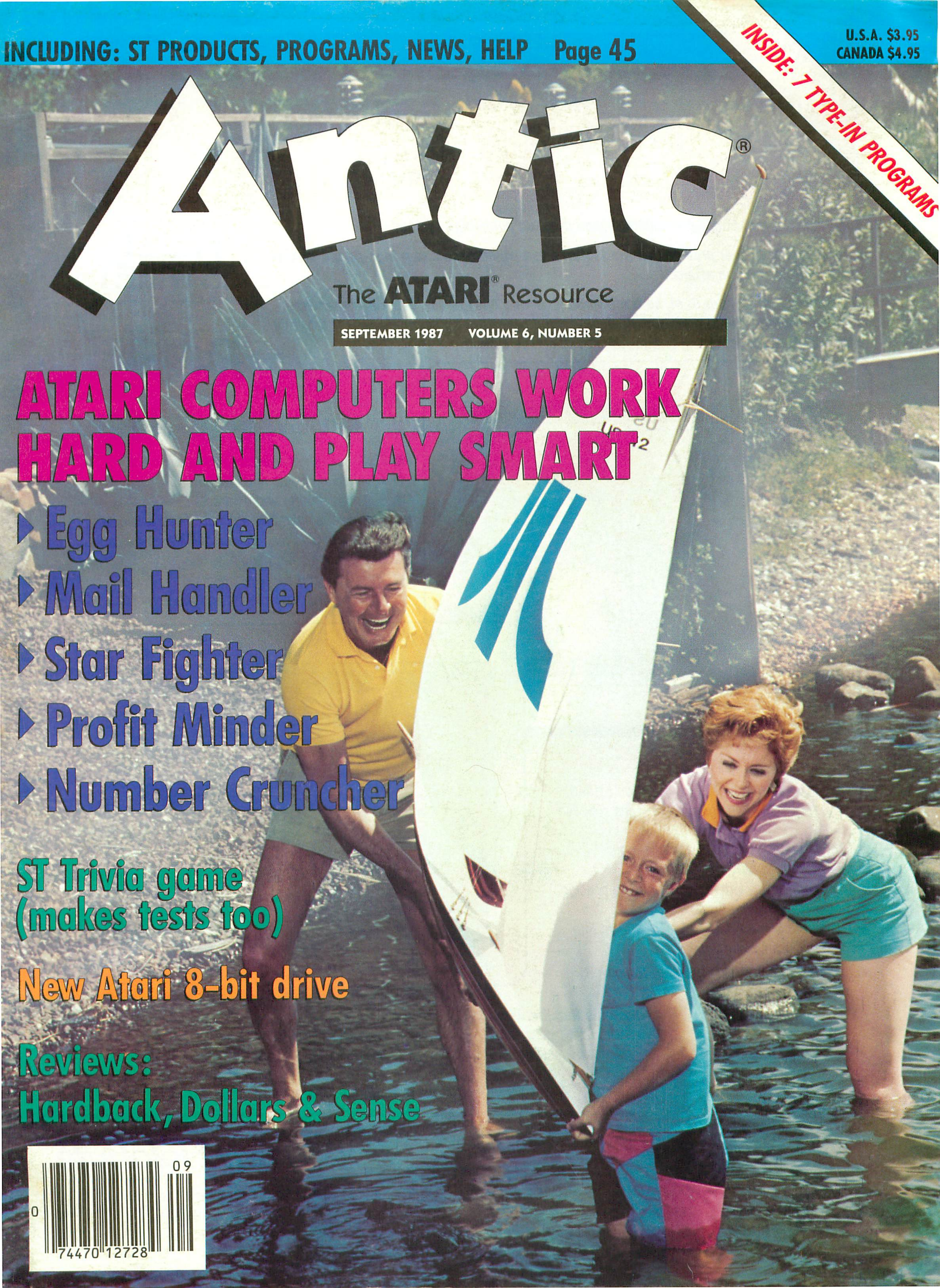


INCLUDING: ST PRODUCTS, PROGRAMS, NEWS, HELP Page 45
INSIDE: 7 TYPE-IN PROGRAMS
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SEPTEMBER 1987 VOLUME 6, NUMBER 5
ATARI COMPUTERS WORK HARD AND PLAY SMART
Egg Hunter
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ST Trivia game (makes tests too)
New Atari 8-bit drive
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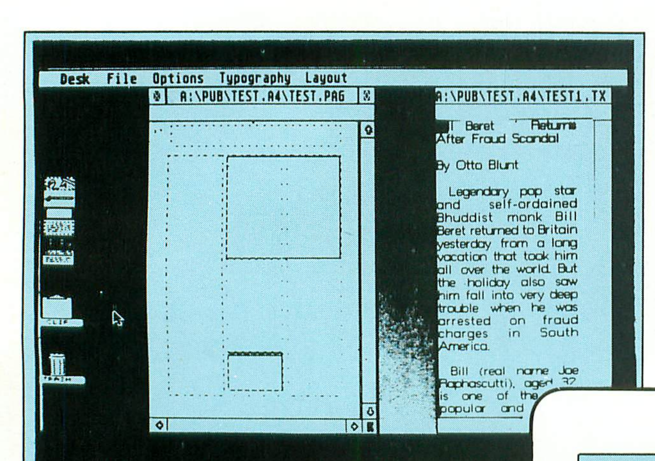
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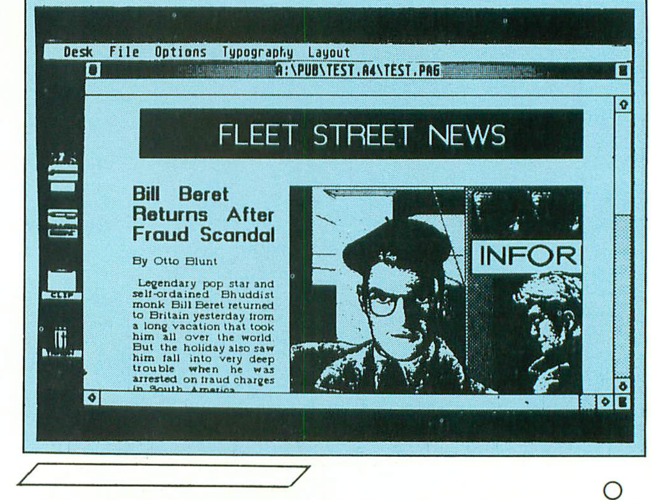
The program runs under GEM, so it's friendly and very easy to use. Working on a what-you-see-is-what-you-get principle, designing good page layouts becomes almost intuitive, with true-to-scale fonts and images displayed on the screen.





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Systems Requirements

—Atari 520 ST minimum
—Monochrome OR color monitor
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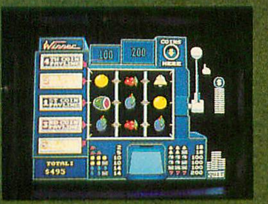
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Slot Machine



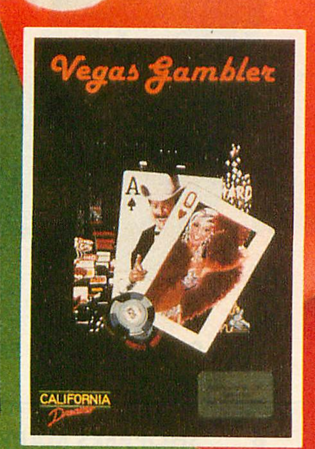
Blackjack



Poker

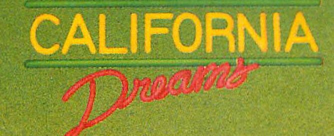


Roulette

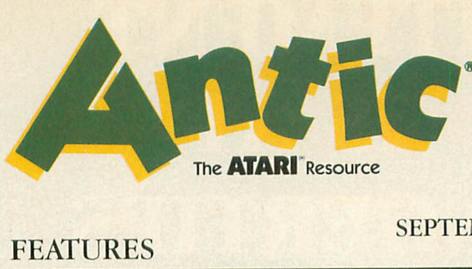








Screens are from Atari ST version.
Atari is a trademark of Atari, Inc.

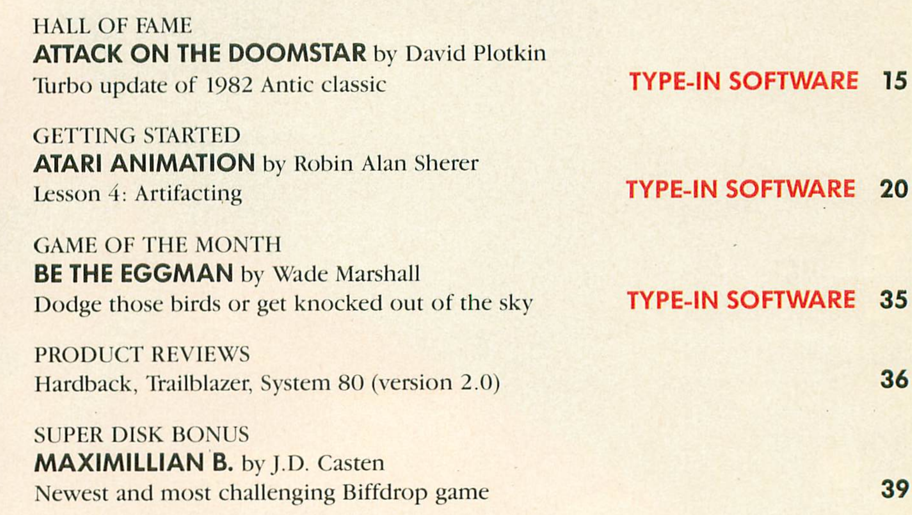


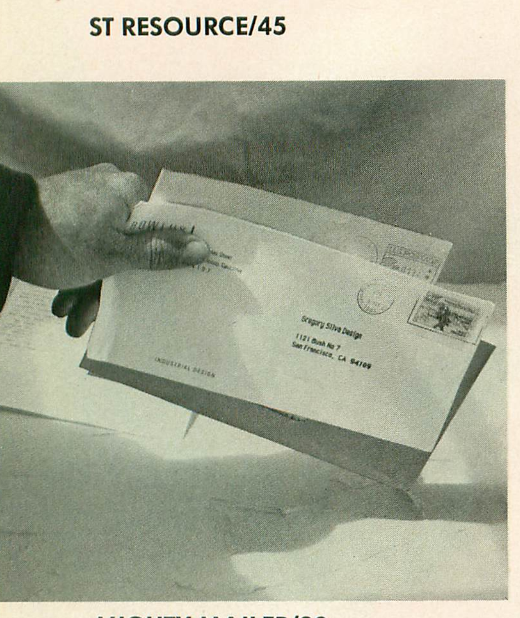


SEPTEMBER 1987, VOLUME 6, NUMBER 5



ST RESOURCE/45





MIGHTY MAILER/30



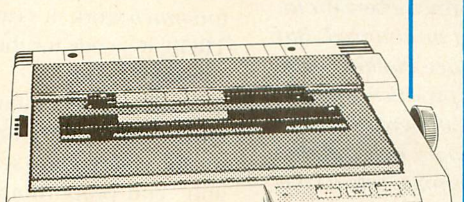
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Editorial submissions should include text and program listings on disk and paper. Submissions will be returned if stamped, self-addressed mailer is supplied. **Antic** assumes no responsibility for unsolicited editorial material.

I/O Board

MINIATURE GOLF

Your June 1987 review of XLEnt Software's Miniature Golf Plus made the game seem identical to the July 1985 **Antic** Game of the Month, *Miniature Golf* by Dave Plotkin. Isn't this a violation of your copyright?

Hal McMillan
San Francisco, CA

Thanks for your concern. Frankly, we had slightly raised eyebrows when Miniature Golf Plus was first announced. But Contributing Editor Dave Plotkin—who also wrote the XLEnt product—quickly convinced us that his commercial version was vastly expanded with features that couldn't have been crammed into a type-in listing.

For example, XLEnt's game can use the 130XE extra memory for as many as 60 holes on a course, and the design-your-own feature is much simpler to operate. And the XLEnt manual credited ***Antic*** *with publishing the original game.*—ANTIC ED

COMPUSERVE NUMBERS

It was good to see your informative article, *Treasure Mapping the New ANTIC ONLINE* (**Antic**, May 1987). I would like to offer one correction: the phone numbers for those interested in more information about CompuServe or ordering a subscription kit are now:

(800) 848-8199
(614) 457-0802 in Ohio and outside U.S.

David Kishler
CompuServe Inc.

GET A RAMDISK

I've owned an Atari 800XL since they first came out. Though I've owned other similarly-priced computers, the XL makes them look sick.

I like to buy the best available programs for my XL. If you haven't upgraded yours to 256K memory, what are you waiting for? Take it from me, I thought that having a RAMdisk wouldn't make much difference, but was I wrong: it's so fast that it's scary. Besides, with that extra memory you can use programs made for the XE.

Garry Dyer
Sydney, Nova Scotia
Canada

ATARIWRITER CODES

Your I/O answer to the AtariWriter Plus question about turning off SG-10 superscript (June 1987) should work—but it's too *much* work. It's easier to use a [CONTROL] [G] code for the "end superscript/subscript" code.

AtariWriter Plus allows only nine such codes—not really enough. I cheat by using the same code to send both "end NLQ" and "end proportional spacing" codes. The standard [SELECT] [DOWN-ARROW] still selects superscript/subscript on.

David Hein
Tuscon, AZ

CLAUG INFO

Somehow the address and phone numbers for the Chicagoland Atari Users Group (CLAUG) didn't get into our July 1987 feature about this users group. Here they are:

CLAUG Newsletter
7454 North Campbell
Avenue
Chicago, IL 60645
(312) 848-0333—voice
CLAUG I BBS—(312)
889-1240

ULTIMA DISKS

I had my Ultima I disk since 1984, but hadn't used it since 1985. I tried to boot it in April—no luck. So I mailed it (and $5) to Sierra On-line on the 25th. On the 28th I borrowed my son's disk—which didn't boot either, so I mailed it (and $5) the next day.

On that day, the 29th, the mailman delivered my replacement disk. On May 2, he delivered my son's.

This is the type of service that builds reputations. It's great to know that there are reliable software manufacturers who stand behind their products.

Marjorie Martin
San Francisco, CA

PRINT SHOP FIX

We had a problem with Print Shop while printing the graphics on page 2 of a greeting card. This happened when the program stopped to THINK, then resumed printing. When we called Broderbund we found that this occurs when Broderbund's programs are used with an 850 interface.

The remedy is to boot Graphics Disk 2 and press [U] when the copyright appears onscreen. The prompt to remove the write-protect tab from the Print Shop disk will appear. Turn the disk over and insert it, then press [RETURN]. When the drive stops moving, the situation will have been remedied. Broderbund told us that this information has been available only by telephone and has not been in print.

Al Hoffman
Carlsbad, CA

LAUDS LABELS

Every year I faithfully trot down to the local newsstand to pick up **Antic's** annual Syncalc tax template on disk. I always putter with all the programs on the disk, but this time I had to thank you for publishing *Designer Labels* (April 1987). Broderbund missed a good bet by not including a utility like this with any of their Print Shop disks. I've already printed thousands of labels for friends, business and myself—all received with great enthusiasm. Congratulations to author Jim Pierson-Perry for a nice job.

Bill Eyler
Albuquerque, NM

STARFLEET PHONES

Because of problems the local phone company is having, our phone line has been disconnected temporarily. Please let the Atari community know that we're still in business and taking orders for our software for the Atari 835 and 1030/XM301 modems and XMM801 printer. We can still be contacted at the address below.

Terry Ortman
Starfleet Software
Company
1037 West Leafland
Avenue
Decatur, IL
62522-1537

New 8-Bit Atari Disk Drive

Twice as fast, twice as much room, same $199 price

By Nat Friedland, Antic Editor

With the XF551 8-bit disk drive, Atari came up with at least one surprise at a June, 1987 Consumer Electronics Show that wasn't supposed to bring any new hardware announcements.

The XF551 is a 360K double-sided, double-density *5 1/4 inch* disk drive that runs 2.9 times faster than the Atari 1050. The compact, XE-gray XF551 is about three-fourths the size of a 1050 which it now replaces. The XF551 also replaces the previously-announced 3 1/2 inch drive for 8-bit Atari computers.

Due in the stores this summer according to Atari, the XF551 will have the same $199.95 list-price as the 1050. Essentially, the XF551 is an adaptation of the standard disk drive mechanism being used for Atari's IBM clone.

The XF551 can automatically adapt itself to today's single density and enhanced density DOS disks. However, ADOS will be the new operating system provided with the XF551. It is being programmed by OSS, creators of Atari DOS 2 and 2.5. Some ADOS features include a tree structure allowing subdirectories, easy switching between menus or keyboard commands, and a high degree of file recovery safety.

Bill Wilkinson of OSS says that ADOS will run on any Atari-compatible disk drive, from the old 810 to a 16Mb hard disk. Although 8Mb is the upper limit for efficient operation, a larger hard disk can be partitioned into several logical drives. DOS 2 and 2.5 files can be read into ADOS, but ADOS is not fully compatible with the older operating systems.

MEGA ST AND MORE

Along with the XF551, the Atari products announced in January at the previous CES are now also scheduled for summer release. This impressive list includes the Mega ST in 1, 2 and 4 megabytes, a $1,500 laser printer, the Atari PC clone and the XE Game System version of the 65XE.

On the 8-bit side, the 80-column XEP80 display box and the 1200-baud SX212 modem are now also promised for summer delivery. According to Atari, final assembly of these products was held up because of delivery delays on key microchips.

ABC BASIC

I was disappointed that no mention was made in *BA$IC Bonanza* (**Antic**, June 1987) of the ABC BASIC Compiler, which compiles existing Atari BASIC files into compact, efficient pseudo-code and runs on all 8-bit Atari computers with 40K and a disk drive.

While ABC doesn't support floating point operations, it does support three-byte integers, resulting in a range of values that is both large enough for most applications and fast enough for professional results. The new version of ABC supports both DOS and LPRINT commands.

Since this product, reviewed in **Antic**, May 1983, is the longest-surviving Atari BASIC compiler on the market—DataSoft, MMG and BASM compilers are no longer sold—it probably should have been mentioned in your review.

H. Jeff Goldberg, President
Monarch Data Systems, Inc.
25 Cambridge Court
Morganville, NJ 07751
(201) 591-9774

continued on next page

Help!

ANTIC WRITER

XL/XE Owners: Antic Writer (July, 1987 Disk Bonus) may display an ERROR 138 message when you try to print your files. This error occurs most often when you use a printer interface other than an Atari 850—such as Digital Device's Ape-Face, the MPP-1150, or ICD's P:R: Connection.

To solve this problem, boot Side "B" of your **Atari Translator** disk before inserting your Antic Writer disk. You can also use **Fix-XL** (The Catalog, $10, PD0026), or Tim Patrick's **Ultrafix** (available from most user groups, bulletin boards and CompuServe's SIG*Atari). *Thanks to Jim Pinyerd for this fix!*

PRINTER DRIVER: This month's Antic Disk includes PRTMAKE. BAS, a BASIC program which will create a sample printer configuration file (SYSTEM.PRT) for Epson-compatible printers. (You do NOT need this file to use Antic Writer.) PRTMAKE.BAS contains printer control codes for boldface and italic type. It also gives Antic Writer two more functions:

Inverse I	Italics ON
Inverse i	Italics OFF
Inverse B	Boldface ON
Inverse b	Boldface OFF

To create a SYSTEM.PRT file, RUN PRTMAKE.BAS (choice 16 from the Antic Monthly Disk menu). When the flashing START prompt appears, remove your monthly disk from the drive, insert your Antic Writer disk and press START. The program will write a SYSTEM.PRT file to your disk.

Since printer features and control codes vary from printer to printer, you may need to create your own printer driver file. This is described in part 2 of the Antic Writer manual.

Antic welcomes your feedback, but we regret that the large volume of mail makes it impossible for the Editors to reply to everyone. Although we do respond to as much reader correspondence as time permits, our highest priority must be to publish I/O answers to questions that are meaningful to a substantial number of readers.

Send letters to: Antic I/O Board, 544 Second Street, San Francisco, CA 94107.

When you want to talk Atari

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Printer Connection....39.99
Supra
Microprint....39.99
1150....39.99
1151 (1200 XL)....39.99
Xetec
Graphix Interface....38.99
Atari
850 Interface....109.00

COMPUTERS



Atari 130XE **$125**
65 XE....84.99
800 XL....68.99
800 XL Package (Indus GT Drive, 1025 Printer, Joystick & Diskettes)....375.00

MEMORY

Axlon
32K Board....19.99
48K Board....Call
128K RAM Disk....Call

MODEMS

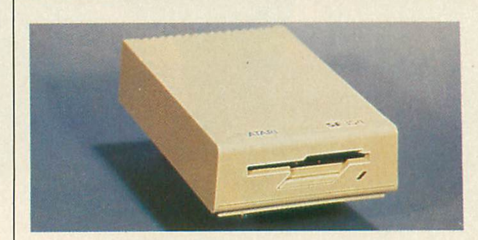
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DRIVES



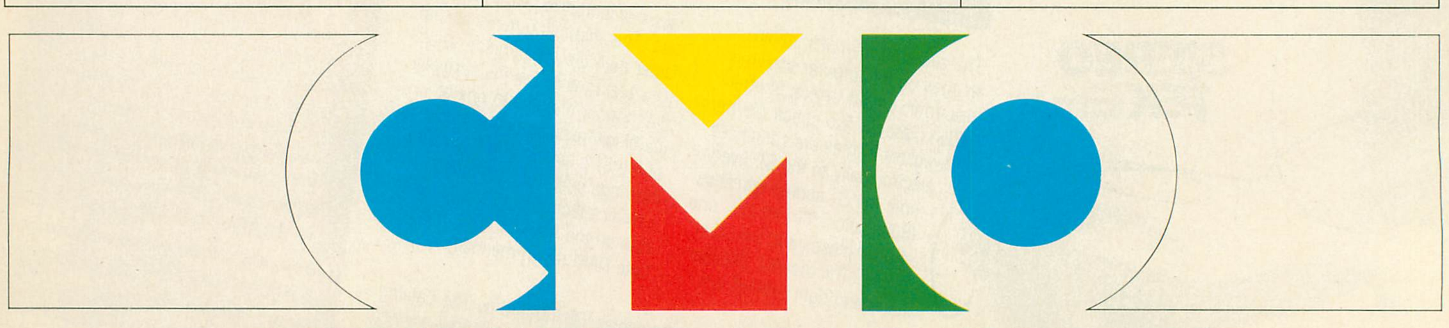
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We can go on and on about the flexibility, features and challenges these exciting games have to offer. But when we said "forever" in the headline, we meant playing, not reading! To find the closest thing to eternal happiness in wargaming, check out these two games at your local computer/software or game store today!

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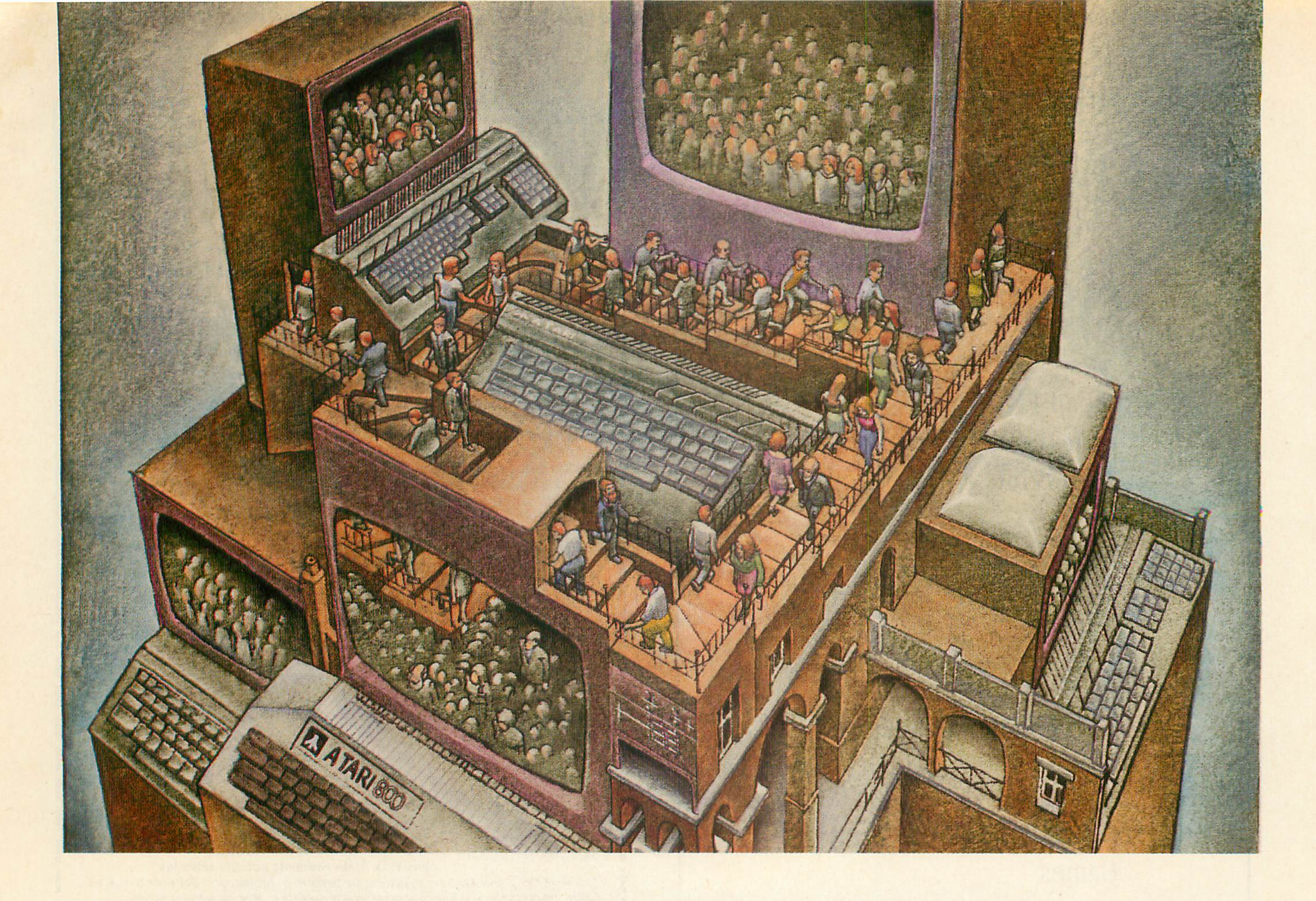
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Attack on the Doomstar

Turbo update of the 1982 Antic classic

By David Plotkin, Antic Contributing Editor

If the force is with you, it may be possible for you to destroy the Doomstar, planet-crunching weapon of the evil Imperial Horde. Attack on the Doomstar requires an 8-bit Atari computer with at least 32K memory, disk or cassette.

Back in 1982, when **Antic** was gearing up to produce a second issue, the highest-grossing science-fiction adventure film of all time was very much on people's minds. David Plotkin, a chemical engineer at Standard Oil, made his first sale to **Antic** with an 8-bit Atari adaptation of the climactic spaceship fight from this movie. Attack on the Doomstar also appeared in the *Best of Antic Anthology* book.

For this Hall of Fame encore, the program has been substantially rewritten by **Antic** Technical Editor Charles Jackson. Attack on the Doomstar now loads and plays faster, as well as being easier to type. We also changed the original title and storyline terminology a bit, due to a request made by representatives of the moviemakers when this game first appeared.



Zoom down that trench and save the universe from evil. May the force be with you!

HOW TO ATTACK

In your X-wing fighter, attack the enemy and protect the rebel base on your home planet from total destruction by that dreaded artificial moon, the Doomstar. Your objective is to fly along a slot and destroy five radiation vents leading to the Doomstar's main reactor. If you succeed, the reactor will overheat and self-destruct the Doomstar.

To hit the green oval vents, line up your cursor aiming system. Use a joystick in port 1 and press the trigger button to fire. If you think this sounds easy, think again. The Doomstar has plenty of its own Imperial fighters, which attack one by one—and can't be knocked out unless they are dead-center in your screen.

*David Plotkin is an **Antic** Contributing Editor and has published many programs and reviews here since his June 1982 Hall of Fame entry.*

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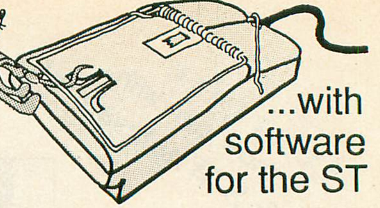
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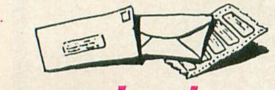
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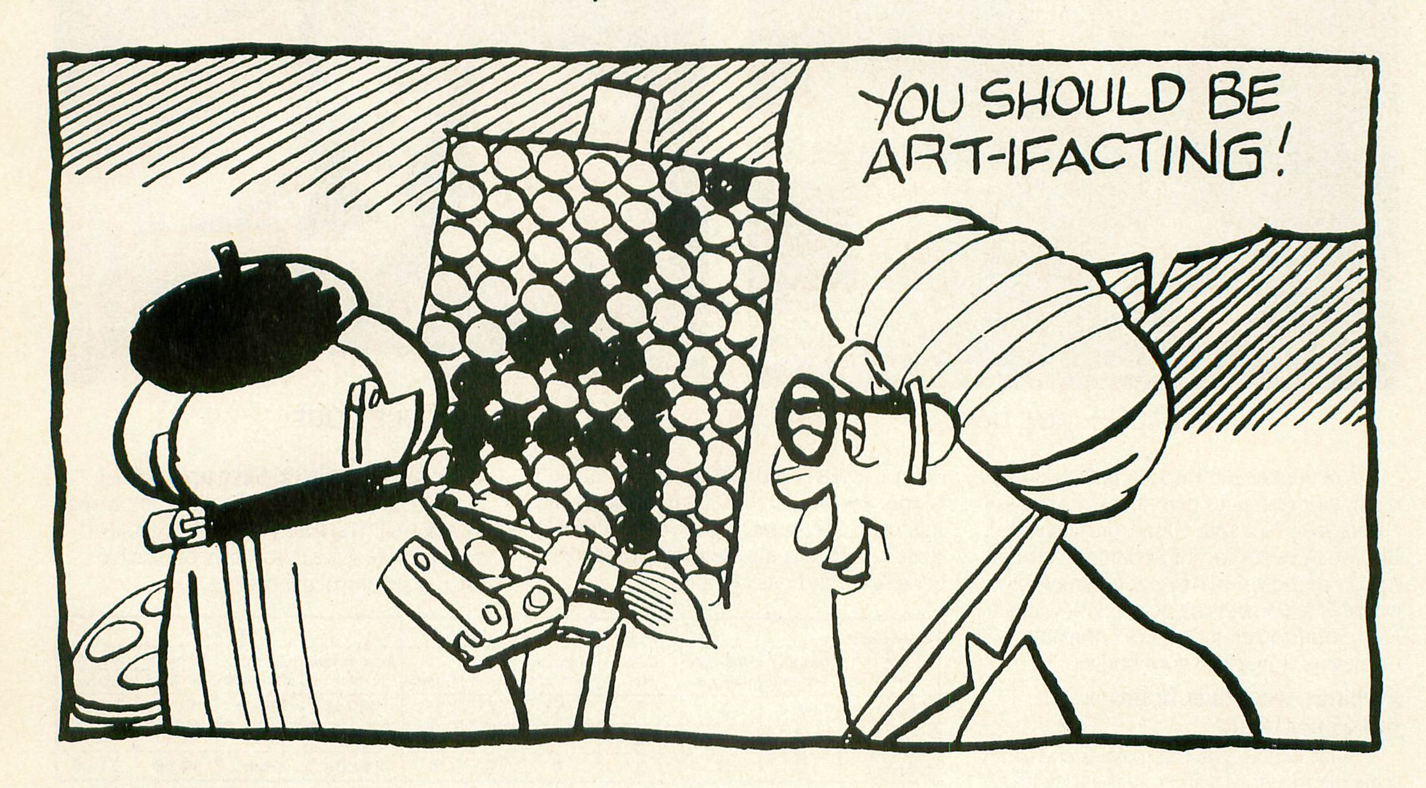
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Atari Animation: Lesson 4

Artifacting

By Robin Alan Sherer



To take full advantage of these Atari Animation lessons, you should be at least an experienced beginner in Atari BASIC. However, any 8-bit Atari user can enjoy using the short graphics demonstration type-in programs that accompany the lessons. These BASIC programs work on Atari 8-bit computers having at least 32K memory, with disk or cassette.

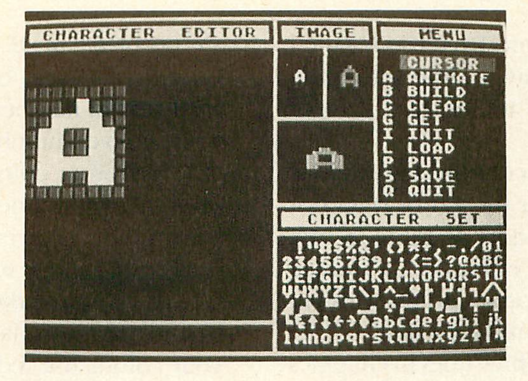
Last month's lesson introduced the two main software tools you'll be using throughout this series—Animation Editor, a professional-quality character set editor, and LinkBAS, which simplifies inserting machine language routines into your BASIC programs.

So this month we'll return to our haunted house animation sequence and use the new programming tools to create more colorful details for the picture.

GETTING STARTED

Type in Listing 1, HOUSE04.BAS, check it with TYPO II and SAVE a copy before you RUN it.

NOTE: The line numbers in this month's listing do not correspond to line numbers in previous Haunted House



Extra colors are best in large blocks

listings. Do NOT try to combine this month's listing with any of the previous Haunted House listings.

If you have trouble typing the special characters in lines 20 and 3020-3500, don't type them in. Listing 2 will create them for you. Type Listing 2, checking it with TYPO II, and SAVE a copy to disk. When RUN, Listing 2 creates these hard-to-type lines and stores them in a disk file called D:LINES.LST.

To merge the two programs, LOAD "D:HOUSE04.BAS" and then ENTER "D:LINES.LST". Finally, remember to SAVE the completed program before you RUN it. In upcoming articles, you'll need this program. Antic Disk owners will find a complete HOUSE04.BAS on this month's disk.

REDEFINED CHARACTERS

This month, we've redefined our entire character set. The data for our new character set is kept in CR$. The subroutine beginning at line 3000 inserts the character data into CR$.

At this point, CR$ contains a valid character set (font), but we can't use it until we place it in an appropriate place in memory. Remember, character sets must begin on an even-numbered page boundary, such as 158 or 224.

The MOVMEM (MOVe MEMory) subroutine at line 4000 takes care of this by copying CR$ into an appropriate location. This location is calculated in line 30. Finally, line 2060 tells the computer to use the new character set instead of its default set.

REDEFINED PROBLEMS

Normally, the letters "C" and "A" appear near the beginning of the character set. But in our new font, the letters "C" and "A" have been moved. They've now replaced the shapes for the [UP ARROW] and [LEFT ARROW] keys.

In other words, we changed the eight numbers telling your Atari how to draw a "A," into eight numbers telling your Atari how to draw the belly of the robot.

But your Atari still needs to know how to draw an "A", so we took our eight "A" numbers and put them somewhere else. In this case, we put them in the place of the eight numbers which form the [UP ARROW] character. We used the same technique to move the "C" character to the [LEFT ARROW] position.

Normally, the [ARROW] characters don't show up on the screen—they just move the cursor around. If we want to PRINT a "C" or an "A" (such as in the word "CASTLE" in line 1290), we must learn a new technique.

We use the CHR$ function to PRINT the correct character. Adding 128 to a character's ATASCII value gives the inverse.

If you stop the program and LIST it, you'll notice that the program looks rather strange. This is because the computer is still using our new character set.

You can learn which of the newly created characters have replaced standard characters by examining the font with a character set editor such as Animation Editor, which we printed last month.

ON YOUR OWN

You should try creating and using your own fonts with this program. Use either version of last month's Animation Editor (CHAREDIT.BAS or CHAREDIT.EXE) to create monsters in various poses, and save the best ones to disk.

Once you've created a font, RUN last month's LINKBAS program to turn the font into a series of BASIC DATA statements. If you want to use your font with this month's listing, follow these steps when using LINKBAS. (In this example, TEST.FNT is the name of our font filename.):

1. Starting line number should be 3000.

2. Type the following at the SOURCEFILE/VAR<@> prompt: TEST.FNT/ CR@

3. LOAD "D:HOUSE04.BAS" then ENTER the file created by LINKBAS. Type RUN and the program will use your new character set.

ARTIFACTING

The first time you worked with a character set editor, you probably noticed that selecting certain pixels made characters red, blue, or green—not just white. When your screen's resolution isn't high enough to support a particular graphics mode, you'll end up with several **artifact** colors, instead of the color you intended to draw.

If you have a very expensive color monitor, you may never see artifact colors. But if you're using a standard television set, you'll see a lot of artifacting—particularly when you try to draw in high resolution. Try this sample:

```
10 GRAPHICS 8:SETCOLOR 2,0,0

20 COLOR 1

30 PLOT 100,100

40 DRAWTO 102,50

50 GOTO 50
```

Bingo—instant artifact colors!

In high resolution, such as Graphics 8, the computer normally draws white pixels. To get white on the screen, the computer actually turns

continued on next page

on three adjacent dots at the same time. Each trio is called a **color clock**. When the video draws a line across the screen, it can only resolve (turn on) 160 of these trios of color dots.

To get the high resolution of 320 columns in Graphics 8, the computer must turn on either the left or right dot in each group. This gives you 320 dots possible in two colors—red and blue—in the above examples. If you see different colors, adjust your tint, color or contrast shown.

If both red and blue dots are lit, you'll see a single white dot on the screen. If you draw these three lines in Graphics 8, you'll see a white horizontal line, a vertical line that's either blue or red, and a diagonal line mixed with both blue and red.

For another way to add colors to high-resolution graphics, type in Listing 3, ART.BAS, check it with TYPO II and SAVE a copy before you RUN it.

Depending on your screen, you should see eight or nine different colors. Lines 100-110 set up the Graphics 8 screen. Lines 120-130 go across the screen and draw slightly diagonal lines—because of the offset of 1, the lines are drawn in two parts. Lines 140-150 draw lines with an offset of 9. Lines 160-170 draw straight lines.

BLENDING COLORS

Blue and white make light blue. Red and white make orange. Other colors also can be created this way, but you can't just put them wherever you want them. Red and blue are no problem. If you want an all-blue area onscreen, just turn on every other pixel across the screen, starting with an odd-numbered pixel. To do the same for red, start with an even-numbered pixel.

To get other colors, such as light blue, try alternating blue and white lines. This won't be perfectly light blue because a few places don't have white pixels next to blue, causing the shape to be full of colors. The only way artifacting will yield these extra colors is if you fill in square shapes or, at least, large solid areas. If you're trying to plan your colors, use red, white and blue for the small, complicated areas of the screen, and use the other colors for larger solids.

Use red, white and blue for small, complex screen areas

Realistically, you're limited to five colors—red, white, blue, light blue and orange/light red—plus a background color. You can even add another color by installing a border. Mixing the "new" colors yields still more colors than are demonstrated in the example program. But these "extra" colors are hard-to-use and we won't be explaining the process until a later lesson.

OTHER TEXT MODES

In the Atari's text modes we sacrifice larger characters for four colors, but we can only use 64 characters at a time. Those larger characters in Graphics 1 and 2 are useful when you combine this technique with a modified display lists (to be covered in upcoming lessons).

You've all seen Space Invaders, which places large, moving characters at the top of the screen. If you wish, you can experiment with this effect by changing some of our previous examples into Graphics 1 and 2. Here's what to do:

1. Change the POSITION statements to reflect the new limits of the screen. This will be either 20 X 24 or 12 X 24.

2. Use a combination of uppercase and lowercase characters, as well as the inverse of both, to get five colors.

3. Plan to use no more than 64 characters at a time (unless you know machine language and want to use interrupts).

Robin Sherer co-wrote some of the best-known Atari programming books, including Tricky Tutorials, Master Memory Map of the Atari, BASIC Arcade Graphics Design *and* Atari Game Design.

Listing on page 70

We Won't Be UNDERSOLD

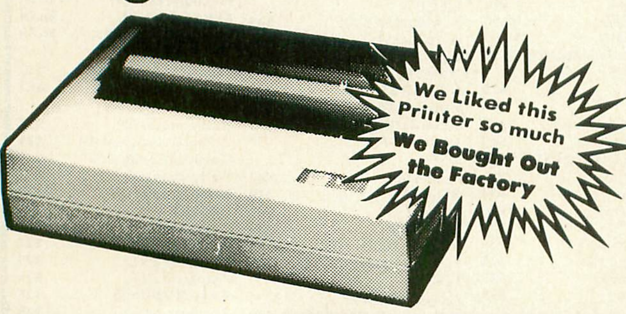
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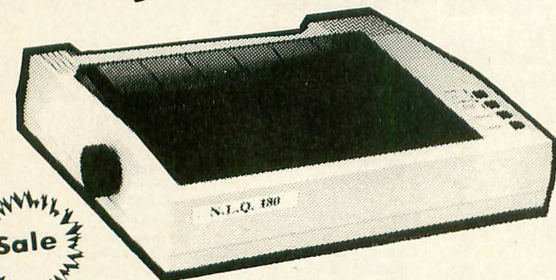
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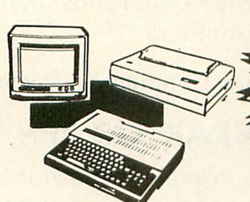
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Desktop Number-Cruncher

Powerful calculator prints out too

By James Brown

Your Atari can be the powerful, versatile desktop calculator you always wanted. Print your calculations and even text comments. This BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.

Have you avoided buying a calculator because you thought it was silly to spend money on such a limited machine when you have a perfectly good Atari computer on your desk? Did you buy a $7.95 calculator and wish it could print a record of your figures? Did you ever want a printing calculator that could insert text comments alongside your figures?

Desktop Printing Calculator is what you need—an 8-bit Atari program that is as easy to use as a desk calculator, but considerably more powerful and flexible.

This program works like a desk calculator. You type the digits, then enter a single keystroke to perform the calculation. There are also a few control functions, such as turning on the printer. All the instructions you need are displayed onscreen.

GETTING STARTED

Type in Listing 1, DESKCALC.BAS, check it with TYPO II and SAVE a copy before you RUN it.

When RUN, a list of available commands appears at the top of the screen. The abbreviations MEM, ACC and ENT appear at the bottom. These are the three *registers* which a calculator uses to hold the numbers you enter. Registers can store only one number at a time.

The ENTry register corresponds to your pocket calculator's display line. Whenever you enter a number, this is its first stop. This is also where your answer appears.

For normal use, beginners may safely ignore the ACC and MEM registers which follow.

Most pocket calculators come with a "MEMory" register which can "remember" one number. Desktop Printing Calculator's MEM register works the same way. Unlike most other calculators, though, Desktop Printing Calculator lets you *see* the number in the memory register.

When you add two numbers, for example, one number is usually passed into the ACCumulator and the newer number is stored in the ENTry register.

Desktop Printing Calculator commands fall into four categories:

- Math Commands (+, −, / etc.)
- Printer Commands (Advance paper, etc.)
- Register Commands (Transfer a number from one register to another.)
- Mode Commands (Decimal or Fixed, RPN or ALG.)

ALGEBRAIC OR RPN

Desktop Printing Calculator lets you enter your calculations in two different ways. You may use the standard ALGebraic method, or Reverse Polish Notation (RPN).

Most businessmen, schoolchildren and pocket calculators use the ALGebraic method. To find the sum of 3 and 5 with this method, you'd press the following keys:

[3] [+] [5] [=]

Some programmers prefer using RPN. To find the sum of 3 and 5 with RPN, you'd press the following keys:

[3] [RETURN] [5] [+] [=]

Important: Desktop Printing Calculator defaults to RPN. If you'd rather use standard algebraic notation, be sure to

press the [V] key before starting your work.

COMMAND LIST

+—Addition

-—Subtraction

*—Multiplication

/—Division

%—Percentage (Automatically divides the number in the ENTry register by 100.)

Advance Paper—Advances the printer paper one line. Handy for separating different calculations.

Clear Entry—Erases any number in the ENTry register and replaces it with a zero. This command does not affect any other register.

Decimal Float/Fixed—Determines whether your printouts will have a fixed decimal point or a floating decimal point. *Fixed* comes in handy when working with dollars and cents. Use *float* when you need more precision.

MC Clear Memory—Erases any number in the MEMory register and replaces it with a zero.

MR Memory Recall—Copies the number from the MEMory register into the ENTry register.

MS Memory Store—Copies the number from the ENTry register into the MEMory register.

M+ Memory Add—Adds the number in the ENTry register to the number in the MEMory register and places the answer back in the MEMory register.

M- Memory Subtract—Subtracts the number in the ENTry register from the number in the MEMory register and places the answer back in the MEMory register.

Note Print— Prints a short note such as "Groceries" or "Traffic Tickets" with your calculations. These notes only appear at the printer, they are not displayed onscreen.

Printer On/Off—Controls your printer. When *on*, the printer will keep a record of all your calculations and print any notes you might add (see previous command).

Subtotal—Copies the number in the ACCumulator register to the ENTry register. If your printer is on, this number and the letter "S" will be printed.

Total—Copies the number in the ACCumulator register to the ENTry register, then clears the ACCumulator register. This is normally used when you want to complete one calculation and start a new one.

Version RPN/ALG—Lets you enter your calculations in either Reverse Polish Notation or ALGebraic form.

[RETURN] key—Copies the number from the ENTry register to the ACCumulator register. In RPN mode, this is often used to enter the first number of a multiplication or division.

[ESC] key - Clears all registers and re-starts the program.

=—Identical to the Subtotal command, except an "=" is printed instead of an "S". This is useful when you want to show the current status of a calculation.



Mary Rhomberg Peloquin

Easy as a desk calculator, but stronger

PRINTING

When using Desktop Printing Calculator with your printer (the [P] command), the number in the ENTry register will be printed at the end of every calculation. The command symbol (T, =, MS, etc.) is also printed to the right of each number.

In Floating Point mode, the numbers are left justified, with a floating decimal point. In Fixed Point mode, the numbers are right justified, with two places after the decimal point. If the number is very large or very small, float format is used regardless of the mode, to allow the number to be printed correctly.

In fixed mode, numbers are cut off (not rounded) to two decimal places for printing, even though there may be more places in the value. The correct value still shows on the screen.

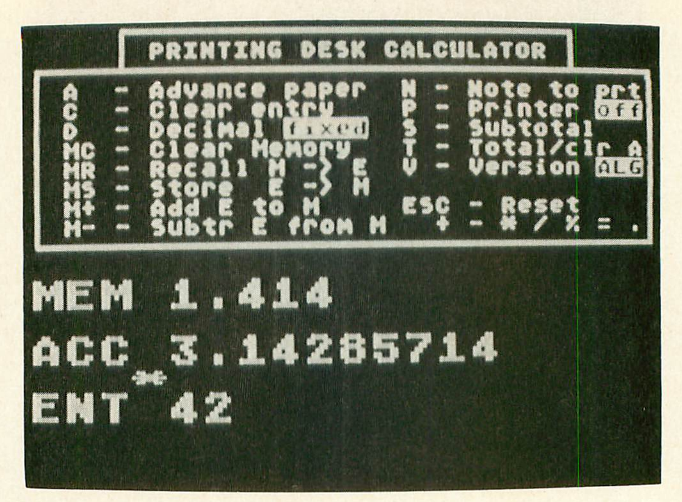
Finally, remember that BASIC uses an internal number representation that allows only 10 significant digits. If you try to add a very small number to a very large number, you can expect to lose the least significant digits, (even in Floating Point mode). This happens with any calculator, so keep it in mind.

CX85 KEYPAD

If you own the discontinued Atari CX85 numeric keypad, you'll be happy to know that Desktop Printing Calculator is completely compatible with this useful device. Just plug the CX85 into joystick

continued on next page

port 2 and you're ready to go.



PROGRAM TAKE-APART

This program demonstrates how to receive characters from both the keyboard and keypad. You can use lines 110, 810-830, and 6500-6599 in your own programs.

Line 810 tells the program to look for the keypad in joystick port 2. You can change the value of KPORT to use a different port if you like.

Line 820 is the translation table which converts the joystick codes generated by the keypad to standard ATASCII characters. The "D", "Y", and "N" represent the Delete, Yes, and No keys on the keypad. You can change these to other functions if you like ("S" and "T" for Subtotal and Total, for example).

Line 830 changes the "D" to the ATASCII delete character. The ESCAPE key on the keypad generates the same code as the 0, so we can't do anything special with it.

Line 6510 forces the keyboard into upper-case. This simplifies the tests elsewhere in the calculator program.

Line 6520 reads the keyboard, but only if a key has been pressed. This is determined by checking location 764, which contains a 255 if no key has been pressed. Variable OLDKC is used to prevent the keypad from repeating rapidly if you don't get your finger off in time. When set to zero, it means that either a keyboard key has been pressed (line 6520) or that the keypad has been checked and no key is pressed (line 6530).

If a keyboard key has been pressed, it is put in variables C and CH$ and returned; otherwise the keypad is checked.

If a key is being pressed, the STRIG function will return zero, and line 6540 will read the value.

Line 6550 checks to see if the value has changed since the last look and, if not, loops back until something else happens. If a new value is available, line 6560 converts it.

All that's left is to give some sound to the keystroke, and save the key value in OLDKC for next time. ▲

James Brown is on the Information Systems staff of the Caltech Jet Propulsion Laboratory in Pasadena, California. He is editor of the JPL Atari users group newsletter.

Listing on page 63

Mighty Mailer

Powerful, versatile, easy-to-use mailing lists

By Philip Bate, Ph.D.

This fast, complete mailing list program in BASIC works on all Atari 8-bit computers of any memory size. It requires a disk drive.

Mailing list programs for the 8-bit Atari are nothing new, even if one hasn't appeared in **Antic** for some time. However, Mighty Mailer is an unusually powerful, versatile and easy-to-use mailing application that will do more for you than many others. Wouldn't you like to have a mailing list program that can do all the following?

1. Finds any name/address entry from any *part* of the name/address—such as first name, last name, number or street, city, state, or even ZIP code.

2. Prints on labels, envelopes or letters.

3. Scrolls through the mail list and can print all selected entries.

4. Allows easy additions or deletions to the list.

5. Automatically loads a personal address file when booted.

6. Saves the updated list with one keystroke.

7. Makes it easy to build a bulk mailing list of any kind or length without need for alphabetizing.

8. Works extremely fast as well as being simple to use.

Sound too good to be true? Well, it *is* true—and Mighty Mailer has even more features: It's error-trapped, so keystroke mistakes won't halt the program. It's operated almost entirely with single-key menu selections. It even automatically chooses typewriter mode or typing in capitals, when needed.

GETTING STARTED

Type in Listing 1, MAILLIST.BAS, check it with TYPO II and SAVE a copy before you RUN it. If you have trouble typing the special characters in lines 80-83, don't type them in. Listing 2 will create these hard-to-type lines for you. Type in Listing 2, check it with TYPO II and SAVE a copy before you RUN it. When RUN, Listing 2 creates a disk file called LINES.LST. To merge the two programs, type NEW, then LOAD MAILLIST.BAS and ENTER LINES.LST. Be sure to SAVE a copy of the completed program before you RUN it.

USING MIGHTY MAILER

The Main Menu offers seven choices —Find & Print, Scroll Or Print, Print Labels, Screen List, Change Menu, Dir & Load, and Make New List. Each is selected by a single keystroke.

Find & Print—Useful for people who write a lot of letters. Your personal address list is automatically loaded upon booting. Now you select this option, type in part of the addressee's name and load the envelope or letter into the printer. Just one more keystroke prints the name and address—simply and quickly.

Scroll Or Print—Allows for scrolling without printing, or printing on either an envelope or letter. This starts with the first name/address on list and goes to the last. Selective printing of any entry on the list is allowed.

Print Labels—Prints the entire list without pausing. Lines 440 and 450 are used for a message, but they can also be used to enter printer spacing information for the labels.

Screen—Quickly displays the entire list onscreen—useful for checking which list it is or searching a particular name.

Change Menu—Add or Delete a name/address entry. Both selections remind you which mailing list is loaded, and both return to the Change Menu instead of the Main Menu. The third Change Menu selection is Save. For added safety, the current filename is displayed and you save changes to this filename with just one keystroke. The last selection returns you to the

Main Menu without saving.

Dir & Load—Displays the disk directory and asks for a filename, which it then Loads, replacing the automatically loaded list (D:ADDLIST). Note: this program was written primarily for single disk drives, so multiple disk drive users will have to modify it for additional device names.

Make New List—Starts a new "DEVICE:FILENAME" and then uses the Add-Name option of the Change Menu. This means that you return to the Change Menu after completing a new list, so it's easy to Save.

Important: It's easier to make the original mailing lists on your word processor. Simply type one [RETURN] after each line in an address, and two [RETURN]s after each complete address.

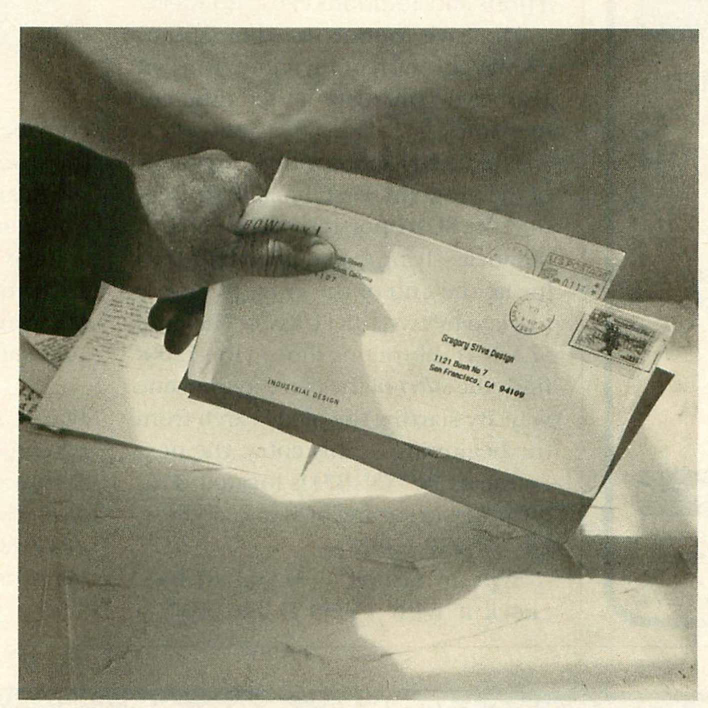
HOW IT WORKS

Because the Atari allows huge strings, each mailing list is contained in one single string. A versatile machine language routine (located in RAND$) is then used to locate individual entries within that string. The item RAND$ searches for is stored in SUB$. After the particular location of the SUB$ is found by the RAND routine, the end of the entry is indicated by two consecutive [RETURN]s. The next step is backing up to find the start of the entry—again by locating the double [RETURNS]s just before the entry. Name and address lines are separated by single [RETURN]s for each line to make them print correctly.

Here's a sample entry:

Joe Zxcubnm
1000 Main Street
Anywhere, FL 33497

That's the entry you'll see printed on the screen, if you enter "Joe Z" unless there happens to be another Joe Z on the mega-string before this one. If so, just press the [SPACEBAR] to scroll all the "Joe Z" names until you find the right one. You could also just enter "Zx" or "xcu" or even just "Z" and do the same thing.



Everything you'd want in a mailing list program

This ability to find a complete name/address entry from any *part* of that entry gives you great flexibility. Suppose you want to send letters to everyone on your list in Anywhere, Florida. Just enter that as the SUB$ and you can address all the envelopes with little fuss. The same goes for the ZIP code—or even just part of the ZIP code.

The two printing modes are identical except that A-mode (Addressee of a letter) prints at column 10 and E-mode (Envelope) prints at column 40. With a little manipulation a double-column address list is simple. Go to Scroll & Print from the menu, and press [A], printing the first name/address at column 10. Then manually roll the paper back to the first line and press [E], which prints at column 40. Continue this down the page, and you have a double-column address list.

With a few changes in these routines you could even print in three columns instead of two, making up Master Address Lists on 33-label paper forms.

Changing a mailing list is also simple. Adding a name just increases the length of the string, as it's tacked onto the end. Deleting a name is just as simple—the gap left in the string is filled in.

I can write a letter and address it very quickly when using this program with a word processor. I know what the names are on my personal ADDLIST, so I simply enter a two- or three-letter combination and the desired entry pops up and prints with one additional keystroke.

PROGRAM TAKE-APART

Line 470, which prints the complete list, and lines 1240 and 1250, which contain print instructions, may require modification to accommodate different printers—see your printer manual. This will work on most Epson and compatible printers. In lines 1240 and 1250 note that the character within the double-quotes is a small "L," *not* a "1". You may wish to modify these lines to include near letter quality printing, etc.

Lines 620-700 add a name/address to the end of the mega-string. Mailing lists are usually alphabetized, so you can find a name quickly. But since the RAND continued on next page

function accomplishes this so fast, you don't really need to alphabetize your list. In effect, you get a random access search.

Lines 720-820 contain the delete function. In lines 790-810, deleted entries are removed from the mega-string and the gap is closed. Thus deletions and additions cause no waste.

The Save routine uses line 860 to display the current filename. You can also save your data under different filenames.

The RAND subroutine is the heart of the program. First, lines 1070-1090 find the SUB$ portion of the entry in the mega-string. Next, lines 1110-1140 locate the end of the entry, which is marked by two [RETURN]s. Then the SEARCH subroutine (lines 1160-1200) finds the *start* of the entry in the same way. By starting the next search from the beginning of this entry, the next "same name" (SUB$) is located. This is the key to sorting by name, address, city or ZIP codes.

Type in Listing 1, MAILLIST.BAS, check it with TYPO II and SAVE a

```
MAIN MENU

1 - FIND & PRINT
2 - SCROLL & PRINT
3 - PRINT LABELS
4 - SCREEN LIST
5 - CHANGE MENU
6 - DIR & LOAD
7 - MAKE NEW LIST

PRESS NUMBER OF CHOICE
```

copy before you RUN it. When RUN, the program defaults to the Main Menu and will not be able to load in a personal list. Make up your personal address list and SAVE it as "D:ADDLIST" on the same disk as the MAILLIST program. From now on, it will automatically load upon booting.

Philip Bate is an orthomolecular psychologist from Stuart, Florida. Before receiving his Ph. D., he was an electronics engineer at Cape Kennedy. He has been programming on his Atari for about a year.

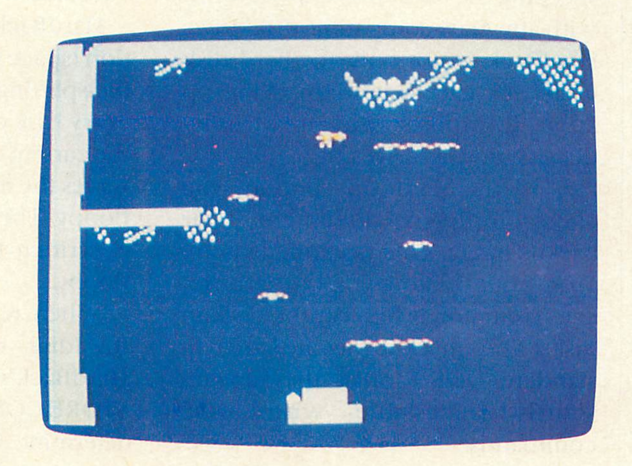
Listing on page 65

Be the Eggman

Dodge those birds or get knocked out of the sky

By Wade Marshall

Be The Eggman is an intriguing, non-war game that appeals to players of all ages. You'll fly a jetpack to the top of a tree and collect the rarest eggs in the world—if the dangerous, protective birds don't knock you out of the sky. This BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.



Tired of collecting stamps or coins? Why not collect birds' eggs? There could be big bucks in it for a hotshot Eggman.

You have just discovered the rarest eggs in the world at the top of a very high tree—slippery elm, so you can't climb it. Even more dangerous, the protective Gloot birds are flying overhead. You must levitate to the very top of the tree and bring the eggs back down again, using only your hi-tech jetpack.

It seems simple—get an egg by reaching the top branch of the tree and safely return to the pad at the bottom. (The excitement of taking possession of an egg will make you change color.) If you collide with a Gloot bird, you'll lose one of your five lives. But if you get all three eggs, you'll advance to a higher level where you'll be forced to fend off more birds.

After the flapping "BIRD EGGS" title screen appears, press [START] to begin the game. If this is your first trip of the day, your screen will be somewhat dim until your jetpack is fully warmed up. When the screen brightens, you're ready to go.

To fly your jetpack, just press the joystick in any direction. Gravity will pull you down.

ABOUT THE PROGRAM

Type in Listing 1, BIRDEGGS.BAS, check it with TYPO II and SAVE a copy before you RUN it.

If you have trouble typing the special characters in line 5027, don't type them in. Listing 2 will create the hard-to-type line for you. Type in Listing 2, check it with TYPO II and SAVE a copy before you RUN it. When RUN, Listing 2 creates a disk file called LINES.LST. To merge the two programs, type NEW and then LOAD BIRDEGGS.BAS and ENTER LINES.LST. Be sure to SAVE a copy of the completed program before you RUN it.

CASSETTE OWNERS: Before you RUN Listing 2, you must modify line 70. Change "D:LINES.LST" to "C:".

The Gloot birds, the eggs and the background are made of ANTIC 4 characters. The eggs, for example, are redefined asterisks.

ANTIC 4 (GRAPHICS 12 on XL and XE computers) is a four-color medium-high resolution character mode. In this mode, each pixel of a character can be in any of four different colors. For an example of this, LIST line 6060 and change each 84 into a 244. This switches the color of the lower left half of the egg character.

Moreover, ANTIC 4 characters are treated as GRAPHICS 0 characters. This allowed me to PRINT a series of

continued on next page

HARDBACK

Orion Micro Systems
2211 Planters Row Drive
Midlothian, VA 23113
(804) 794-9437
Requires SpartaDOS 3.2d
$39.95, 48K disk

Reviewed by Cabell Clarke

My Atari 130XE bulletin board system (*The Boot Factory, (804) 262-9289*—ANTIC ED) grew to the point where I needed a hard disk, so I put together my own set-up using the ICD Multi I/O reviewed in **Antic**, April 1987.

Soon I realized it was absolutely necessary to have the hard disk fully backed up, because it was just as vulnerable to my DOS fumbles as the floppy system had been—but now errors were much more disastrous.

Trying to back up the subdirectories using DOS was extremely slow and cumbersome. So I was pleased when Orion Micro Systems asked me to beta test for their new backup program, **HardBack**. (My only connection with Orion is as an occasional volunteer beta tester and I have never received any payments from them.)

HardBack makes fast, simple and reliable backups of high-capacity drives and RAMdisks. Minimal typing and disk-swapping is required. This is a lot easier than copying with batch files and trying to optimize your hard disk space at the same time.

Hardback is written in ACTION! and compiled with the runtime package so you don't need the ACTION! cartridge. It consists of the backup program itself and a second program that restores backed up files to the hard disk or RAMdisk.

Currently, HardBack runs only under SpartaDOS v. 3.2d. It supports the Ultra-Speed sector skew available with ICD's U.S. Doubler, thus greatly speeding the backup. But it will work with any Atari-compatible disk drive. HardBack is not only for hard disk users. It's excellent for backing up large RAMdisks and quadruple-density floppy drives.

With the HardCopy option, you can completely document your backup in a disk file, printout, or both. From your printout you can easily locate your stored files on the backup disks. And since the files are stored in standard DOS format, they are instantly accessible with DOS commands.

HardBack is not copy-protected, but you must give the serial number to run the program. Next, specify the source path—D1: through D8: or Dn:[SUBDIR], etc. You can start anywhere you want. HardBack then asks for the destination drive, which must be different from the source. And if you choose to back up files by date, HardBack copies only those files with a date later than the one you specify.

Next, HardBack will ask you for your format preferences—NO FORMAT, REINIT ONLY, FORMAT, USE PRESET OPTIONS. If your disks are already formatted, select the first option and go. If your disks were used previously, you must REINIT them in order to free all space. This process only rewrites the directory sectors to free all space and ready the disks for backup. No formatting is actually performed.

Choosing to format each disk gives you a menu of format options which allow for single or double density, single or double-sided drives, and U.S. Doubler Ultra-Speed. If you need more disks than you prepared, don't panic—options can be changed at each disk-swap.

After your format selections are made, HardBack reads your source disk and builds the subdirectory table. Insert the disk into your destination drive and press any key to start the backup. As each disk fills up, you are prompted to insert the next disk and continue.

HardBack also has disk optimization (space saving) options. Selecting file-splitting across your floppies uses every byte on the disk. Then it splits the current open file (if necessary) and writes the remaining bytes to the next floppy. The filename of any split file is written to a header file on that floppy.

When restoring the hard disk or RAMdisk, the opposite takes place. HardBack's second program, RESTORE.COM, reads the header file to determine if the backup disk is in proper sequence and if a split file is at the beginning of that disk. During restoration, any split-off files are appended to the previous file.

This is a tremendous feature. Users can swap disks and read magazines while HardBack fills each disk and manages the files. Also, HardBack uses as few disks as possible. (If you'd rather not split the files, you can turn off that option.)

You can choose to verify the resto-

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EGGMAN
continued from page 35

[INSERT], [DELETE], and [DOWN ARROW] characters to move an entire line of birds.

I stored a series of these characters in the variable string PATN$ for easy switching of the movement patterns between the different levels of birds (see line 20). Intermediate levels can be seen by changing the variable LEVEL in line 5017 to any number in between 1 and 10. Level 10 has 25 birds (50 moving characters) coming at you.

I found that young children like to watch and play this simple but challenging game. Older players also like this game because you don't need to be a wizard with the joystick in order to reach the higher levels. Patience and anticipation are more important.

*Canadian high school student Wade Marshall is 17 and lives in Leduc, Alberta. This is his first submission to **Antic**. He has been programming the 8-bit Atari since 1983.*

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continued from page 36

ration of any file, or just let HardBack restore all files on your floppies. The software re-creates all necessary subdirectories on your hard disk.

HardBack lets you start your restoration anywhere in the sequence. For instance, you can restore the hard disk starting with floppy number five. This saves time if you restore with a different subdirectory. And if you must abort a restoration, you can start where you aborted—you don't have to start from scratch.

I've foolishly trashed the directory on my own hard disk several times, and HardBack has really saved the day. You can back up individual directories—bypassing the trashed directories so that the Hard Drive is not a total loss. I know you that you can do that with DOS, but HardBack is a lot easier and quicker.

HardBack is one of the nicest 8-bit tools in years. I can't do without it. I highly recommend this product for hard disk users, BBS sysops and anyone who needs to maintain backups of their high-capacity drives.

SYSTEM-80

(Version 2)
Small Systems Innovation
600 West 21 Avenue
Apache Junction, AZ 85220
(602) 983-2686
$49.95, 48K disk

Reviewed by Gregg Pearlman

When **Antic** reviewed the original version of **System-80** in the June 1987 issue, we praised its crisp, readable 80-column display but pointed out that it had few of the word processing features accepted as standard.

The revised version of System-80 arrived just as the June issue went off to the printer. For some reason, the new 80-column display isn't quite as readable, even on a monochrome monitor. But the program's added

word processing features now include cut-and-paste and a fine search-and-replace. Printer control codes are accessed via macros (keystroke series saved in memory).

Most System-80 commands are mnemonic—[CONTROL] [T] takes you to the top of a file, [CONTROL] [D] duplicates a block of text, etc.—but some are strange. For example, to change uppercase text to lowercase, you must press [CONTROL] [CAPS]. You'd think that command would also work in changing lowercase to upper, but instead you must use [CONTROL] [SHIFT] [CAPS].

Search-and-replace is probably the best new feature in this package. It's fast and complete, and you can skip an occurrence of a search string or replace them all. The block move function also works well.

The program has a 16K text buffer, but it still doesn't wordwrap—either onscreen or in printouts—or indicate how much room is left either in the buffer or on the disk. Also, the directory gives only filenames, not file sizes.

Carriage returns are not visible onscreen, and you can't put them inside paragraphs (to split an overlong paragraph as an afterthought, for example). Also, there's no insert mode, just overstrike. And the cursor disappears while moving along a row or column, so you can't really tell where it is until you stop cursoring.

System-80 uses "short sectors" of 80 bytes each. That is, each 80-column line in a System-80 file is saved as a single sector, and the remaining 45 (usable) bytes are filled with extraneous text or special symbols. If you examine these sectors with a sector editor such as DISKWIZ-II, you'll see something like this:

Each 80-
column l
ine in a
System-
80 file

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J.D. Casten's Maximillian B.

Super Disk Bonus Game

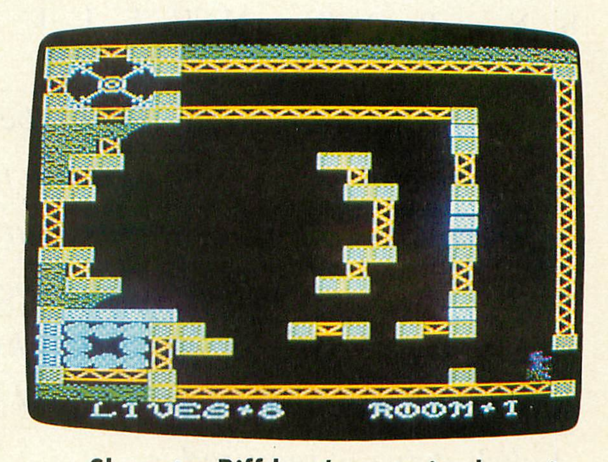
With six games published by **Antic** since his April, 1984 debut with Risky Rescue, J.D. Casten has been this magazine's most popular 8-bit action game programmer. This popularity was earned despite the unusual difficulty of typing in Casten's listings, which tend to make heavy use of graphics built from the Atari special characters.

Casten's most recent submission, Maximillian B., made **Antic's** editors regretfully conclude that J.D. had finally crossed over the line where it would be a cruel and unusual punishment for readers to type his listing. Not that the listing was excessively long—it runs on 8-bit Atari computers with at least 48K memory and a disk drive. But it contained so many special characters that the required second data-loader listing would have brought the total type-in length to over 200 sectors. That's almost 40 sectors longer than the biggest programs we've ever published—around 10 pages of typing, much of it just line after line of data numbers.

But we didn't want this game to get away entirely, because Maximillian B. is in many ways Casten's toughest player challenge yet. It requires you to plan ahead strategically while you are in the midst of fast and tricky arcade maze action on a complex series of graphics screens.

Fortunately, we are able to bring you Maximillian B. as this month's Super Disk Bonus, MAXIII.BAS. So you won't miss out on the latest deadly mission facing the Inspectors of Mysterious Mishaps at Icked Industries. Our hero, Maxy, is the motorized cousin of that adventurous duck, Sylvester Biffdrop, who starred in **Antic's** *Escape From Epsilon* (June, 1984) and *Biffdrop* (December, 1984).

The rest of **Antic's** Casten programs are *Box-In* (December, 1985), *Advent X-5* (November,, 1984), *Rebound* (January, 1987) *Rebound Construction Kit* (February, 1987) and *Easy 80* (July, 1987). TYPO II line codes for the older graphics games were provided in the July, 1985 issue.



Slyvester Biffdrop's motorized cousin.

DISK DESK

Phone the Disk Desk at (415) 957-0886 for shipment of this September, 1987 Antic Disk within 24 hours—only $5.95 on your Visa or MasterCard. Or mail a $5.95 check to **Antic**, 544 Second Street, San Francisco, CA 94107.

PROGRAMMERS: Now you can submit your larger, more ambitious 8-bit or ST programs to **Antic** for consideration as a possible Super Disk Bonus. Any programming language with a runtime version is eligible.

Annual % Rate

BY BOB MUELLER

It's confusing to try to figure out the real *percentage of gain you're earning from your savings and investments. But Annual % Rate will help you find the answers. This BASIC program works on Atari 8-bit computers with at least 32K. A disk drive is required.*

Have you ever wondered what was the *real* percentage of gain from your own savings program—such as your investment plan at work or that IRA nest egg you've been saving? Or what if you save different amounts at irregular intervals while the rate of return changes or is unknown?

Your handy calculator would probably let you down if you tried to crunch these numbers with it. But with the Annual % Rate program, your Atari can find the "effective annual rate of return" for many investments and savings plans. This program works for savings accounts, stocks, bonds and mutual funds, as well as combinations of these investments.

Total balances, gains, averages and durations are calculated from the amounts and dates that you put into a data file. The yield percentages (effective rates of return) are computed from your average daily balance and the gains received or compounded are calculated from your savings.

The program also can estimate gains accrued since the last payment date, based on the rate of return from the previous period. Percent yields are shown for both the current term and overall (from the starting date to the most recent gain date). All data, along with descriptions of each entry, can be saved to a disk file called APR.DAT, for later additions or modifications.

Although the word *gain* is used for consistency throughout these instructions, the terms *interest*, *dividend*, or *appreciated value* can be substituted when you use the program to track savings accounts, stocks, bonds, mutual funds, etc. to determine the current value of your holding. The gain would then be that value, minus your total savings to date, minus the sum of any previously posted gains. This might just be the change in value since the last posted gain.

For some investments, the gain could be a negative number—a loss. Enter losses as negative gains using the "Gain Credit (Fund Change)" selection from the entry type menu. The total gains received to date are included on the results screen and as part of the printout. You may choose to track a fund weekly, monthly, annually or whenever you'd like to know how you're doing.

Remember that fees, commissions, points, premiums, etc. can be included in your entry amounts to help find the actual APR of return. By learning actual returns from alternative investments, your ability to make better financial decisions will be enhanced.

GETTING STARTED

Type in Listing 1, APR.BAS, checking it with TYPO II, and SAVE a copy before you RUN it.

No matter which computer you use, it may be convenient to include an AUTORUN.SYS file on your Annual % Rate disk to make the programs load and run automatically.

Listing 2 will create this type of file for you. Type in Listing 2, check it with TYPO II, and SAVE a copy before

How much do your $$$ really *earn?*

you RUN it. When RUN, Listing 2 creates a disk file called AUTOAPR.SYS. (Antic Disk owners will find AUTOAPR.SYS on the September 1987 monthly disk.) Change the name of AUTOAPR.SYS to AUTORUN.SYS and your Annual % Rate program will load and run automatically. Note that you *don't* need these files to use Listing 1.

When the main APR menu appears, use the first two menu items to enter the amounts, dates and descriptions for an account, fund or investment.

The first time through, just make up some simple numbers and work through the program cycle so you can become familiar with it. Some prompts ask you to press a key, while others want you to type in a number, amount or description. A single keypress makes menu selections, while you need to press the [RETURN] key following each entry of "inputted" data. Often [RETURN] is all you need for a blank or default entry.

USING A%R

Choose selection 1 from the main menu. This initial entry is the balance and date for the beginning of computations. It could be the initial amount saved or the cost of the investment. For existing accounts use the balance (value) on the gain (interest payment) date that represents the beginning of the period to be checked.

For subsequent entries, you can choose among five types:

1—Gain stays (is compounded) in the account.

2—Gain leaves the account. For example, when you get an interest check in the mail.

3—Deposits (new savings) in the account.

4—Withdrawals from the account.

5—Estimate of accrued gain since the last gain entry date.

Don't worry if you make an error while typing in the data—it can be corrected later. Just complete the other items making up that entry.

After typing one or two entries of each type, use main menu selection 3 to display the entries onscreen. Note that each entry is numbered and the amounts are lined up in debit/credit columns. The second line of each entry shows whatever description you may have typed in. If you entered 10 for ten dollars, it appears as 10.00. The program adds the decimal and trailing zeros.

If you're familiar with BASIC editing *via the* [ARROW] keys, try main menu selection 4 to correct a date, description, or amount. Move the cursor to the entry and type over it. Just remember: Don't change the locations of the decimal point or the date delineators (/). After making corrections, press [RETURN] while the cursor is on either line of the entry. If you make a mistake in typing an entry number for correction, press [RETURN] *without* moving the cursor. The program then returns you to the main menu.

If you aren't familiar with the BASIC editor, use main menu selection 5 to delete an entry and selection 2 to re-insert the corrected version. Also, try the MOVE and SWAP features of 5. Display the entries as you go along, to prove to yourself that the repositioned entries were renumbered to stay in sequence.

When you're familiar with these menu items, put the entries in chronological order using the SWAP and MOVE features from main menu selection 5. If the program finds entries with the dates out of sequence, it either notes the error or thinks one of the dates is in the next century.

Next, use main menu selection 6 to calculate and display the yields. These may not make much sense with your made-up data sample, but the screen will show the date of the last entry, the current balance, the percentage yield between the last two gain dates and the approximate accrued gain since the date of the most recent gain entry. (A default rate of 5% is used if a gain entry was not found.) The total of all gains received to date is shown next, followed by the overall average daily balance since the first entry.

Finally, you see the annual effective rate of return (yield to date) from the first entry date to the date of the most recent gain entry. While computing, accrued gains are added to all type 5 "Calculation (No Fund Change)" entries. View these by returning to the main menu and using selection 3 to display the entries. Type 5 entries have no effect on percentage calculations or account balance. They're particularly useful for approximating the accrued gains to the current date or to some future date.

continued on next page

EFFECTIVE ANNUAL YIELD FOR GM SAVINGS-STOCK PURCHASE PROGRAM
AS OF
12/31/86

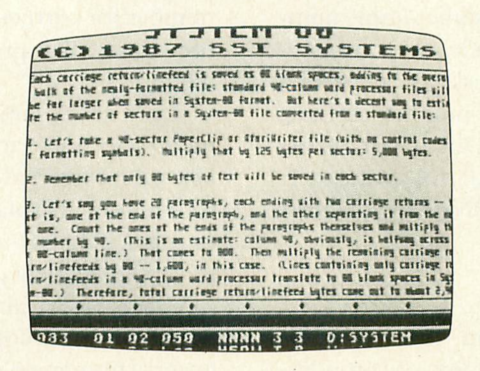
DATE	NO	DESCRIPTION	ACCRUED	DEBIT	CREDIT	BALANCE	AVG BAL	INT $	TERM%	YLD%
1/15/81	1	(GM @ 45.25) 1ST SAVINGS			232.00	232.00				
1/30/81	2	PAYROLL SAVINGS			234.00	466.00				
2/13/81	3	PAYROLL SAVINGS			232.00	698.00				
2/27/81	4	PAYROLL SAVINGS			234.00	932.00				
3/13/81	5	PAYROLL SAVINGS			235.00	1167.00				
3/31/81	6	PAYROLL SAVINGS			237.00	1404.00				
4/15/81	7	PAYROLL SAVINGS			235.00	1639.00				
					237.00	1876.00				
						2111.00				

is saved
as a si
ngle sec
tor. If
you exa
YYYYYYYY
YYYYYYYY
YYYYYYYY
YYYYYYee
eeeeeeee
ee%E)xxx

The final "xxx" in the above example represents the link pointer. Those 45 bytes won't *hurt* you any, but they can muddle things a bit if you try to edit that file in a word processor that uses all 125 available bytes in a sector.

Each carriage return/linefeed is saved as 80 blank spaces, adding to the overall bulk of the newly-formatted file. Also saved are 14-sector files with ".MAC" extenders—they're blank macro files which you can delete.

I calculated that 40 sectors of a 40-column text file in PaperClip or



AtariWriter would translate to approximately 83 sectors in the System-80 format—making the files just about twice as large.

Overall, System-80 is a valiant effort that is more user-friendly than some other 80-column word processors for the 8-bit Atari. But many potential purchasers will be put off by the lack of wordwrap and the space-hogging file format.

TRAILBLAZER

Mindscape Inc.
3444 Dundee Road
Northbrook, IL 60062
(312) 480-7667
$29.95, 48K disk

Reviewed by Gregg Pearlman

If your favorite games include Ballblazer and Marble Madness, then you'll enjoy Mindscape's **TrailBlazer** as sort of a combination of both. The graphics are crisp and interesting, while this game is fast-paced and none too easy to master.

Using the joystick or keyboard, you must maneuver an extraterrestrial soc-

ANNUAL % RATE
continued from page 41

PRINT AND SAVE

If your printer can work in compressed mode (about 130 characters per line) you may be able to use selection 7 to print a report showing how the percentages changed at each gain entry. This program was written for the Atari 825 or XMM801 printer. For proper alignment, centering and pagination on your own printer, you may need to know how to change the printer control codes in the HEADING and FILL subroutines.

Be sure to use main menu selection 8 to save the data back to disk—it's a good idea to save to disk *often*. The data currently in memory replaces any APR.DAT file on that disk. If saved, the data is loaded automatically into memory the next time that you run Annual % Rate. If you do not wish to exit the program, type an "N" at the *Do you really want to quit?* prompt. This will return you to the main menu.

If you *don't* want to save the data, use the "Delete All" function of 5 before quitting. When there are zero entries in memory, item 8 will *not* disturb an APR.DAT file.

You can use multiple disks when concurrently tracking separate accounts. It's also possible to find the overall performance for several items with a single set of data entries, especially when the gain amounts can be combined on the same date (from market quotations, for example).

The number of possible entries for the particular Atari computer model used is shown in main menu selection 1. The program automatically adjusts to the particular configuration being used. The 48K and 64K computers can hold about 260 entries. These numbers could be increased slightly by deleting the REM lines from the program and deleting the lines 3380-3460, which are used only by the 130XE. As coded, the program recognizes and uses the extra 130XE memory. If the APR disk also has the DOS 2.5 RAMDISK.COM file, there will be room for 635 entries (770 if DUP.SYS is also deleted).

On the 130XE,the data is accessed from the RAMdisk rather than from the large data string (S$) located in "regular" memory of the other computers. The bottom of the title screen indicates entry numbers while the RAMdisk is being set up on the 130XE. For example, you might need additional entries when regular savings are deducted from each paycheck over a period of several years.

*Bob Mueller is an electrical engineer with the Delco Products Division of General Motors. He has written several financial programs in BASIC on his Atari 800. This is his first publication in **Antic**.*

Listing on page 67

cer ball down the "hyperspatial color grid" and across the finish line before the allotted time runs out. Moving the joystick forward to go faster, backward to slow down, and left and right to go left and right is simple enough, as is pressing the joystick button to "jump." But you'll find tough obstacles such as black holes or squares that move the ball in the opposite direction of the way you intended.

In fact, each square color has a different function. Blue has no effect—they're the "safe" squares. Yellow bounces you, which can help or hurt, depending on your proximity to a black hole. Purple (or pink, depending on your monitor) moves you right when you want to go left, or vice versa—but pushing the joystick forward or backward works as usual. Green speeds you up and red slows you down. Flashing squares turn on warp speed. The black holes are just that—holes in the grid for your ball to fall into. They dump you back on track (if you're lucky) but you lose time.

One or two players can compete in arcade or trial modes, or one player can challenge a "robot" opponent. You score 10 points for each square traversed and 100 while in warp speed. You also get bonus points for time remaining after each course, as well as a bonus game for every three courses completed.

In arcade or robot options, you can jump only seven times per course, but you get credit for unused jumps in previous courses. However, jumps are unlimited in trial mode and if you hold down the joystick button just after the ball starts moving, you can complete the course in under 11 seconds. Obviously, this defeats the purpose of the game.

TrailBlazer's graphics are similar to Ballblazer, but even better—less chunky. Another similarity lies in the split-screen display—player 1 is on top, and player 2 or the robot is on the bottom. The game resembles Marble Madness in its basic premise—moving the ball over the course without falling off the edge or down a hole.

TrailBlazer comes on a Commodore/Atari "flippy" disk, with the Atari version on side 2, as always. The eight-page manual is as clear as it needs to be.

Overall, TrailBlazer is easy to play, but difficult to play well. You might while away countless hours trying to zip through the 21 courses and improve upon your previous high score, but your hands could ache from all the joystick manipulations. ▲

New Products notices are compiled by the ***Antic*** *staff from information provided by the products' manufacturers. Antic welcomes such submissions, but assumes no responsibility for the accuracy of these notices or the performance of the products listed.*

THE EXPANDER

(operating system)
Synergy Concepts
1404 Brewerton Drive #354
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The resident Executive Program of the menu-driven **Expander** operating system gives you control of memory upgrades up to 512K. You can control BASIC through [RESET] or the keyboard, configure and control multiple RAM drives, boot any RAM drive as drive 1, boot any drive(up to drive 5), or break from any program and reboot. A built-in mini-DOS and more than 35 user-controllable conditions and functions are also on tap.

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2050 Garber Road, Suite 3A
Winchester, VA 22601
(703) 662-0261
$29.95, 48K disk

Capture your enemies' flags, demolish their tanks, destroy their base depots, cut supply lines and strand their tanks in **Tanksalot**. Events are realistically resolved, based on tank class factors. Play is based on your ability and strategy. You'll be given enough easily understood data to make a combat judgment for each play phase. Includes a full-color battlefield map.

LURKING HORROR, STATIONFALL

(text adventure games)
Infocom Inc.
125 CambridgePark Drive
Cambridge, MA 02140
(617) 492-6000
$34.95 each, 48K disk

If you're a Stephen King or H.P. Lovecraft fan, you'll feel right at home with **Lurking Horror**, Infocom's first interactive horror story. You'll enter a world more terrifying than your worst nightmares when you enroll at the George Underwood Edwards Institute of Technology (Gooey Tech). You'll hear about the decrepit underground tunnels, and you'll vow to avoid them—but one night in a blizzard you'll have no choice.

In a less frightening vein, Planetfall author Steve Meretzky's unforgettable robot Floyd returns. As a member of the Stellar Patrol, your heroics in Planetfall got you promoted from Ensign Seventh Class to Lieutenant First Class—on the paperwork task force, which is about as interesting as it sounds. You've been given the challenging task of picking up a supply of forms from a nearby space station—sounds dull, until you meet up with Floyd. This becomes no routine mission.

RICK HANSON

(text adventure game)
Robico Software
3 Fairland Close
Llantrisant, Mid Glamorgan
CF7 8QH, Great Britain
(0443) 227354
About $24, 48K disk

This British text adventure game has 230 locations, 70K of text and a sentence interpreter. It's the first part of the **Rick Hanson** trilogy. The other two games are Project Thesius and Myorem.

HF-LINK PRODUCTS

(radio communications)
Wald-Easterday Associates Inc.
P.O. Box 16165
Columbus, OH 43216
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The HF-Link line of hardware and software products let amateur radio operators control the popular Yaesu FT-980 and FT-757GX HF transceivers with Atari 8-bit computers and a joystick. Features include accurate on-screen graphic displays of the transceiver's operational status, scanning memory channels at user-determined rates, producing and rapidly updating station logs, and storing unlimited log and memory channel data files on disk.

REBEL CHARGE AT CHICKAMAUGA

(wargame software)
Strategic Simulations Inc.
1046 North Rengstorff Avenue
Mountain View, CA 94043
(415) 964-1353
$49.95, 48K disk

SSI's new Civil War simulation uses a refined version of the game system from Gettysburg: The Turning Point. All units are now brigade-sized and can be divided into demi-brigades and then built up. Command Control can be changed by the players, and turns now represent two hours instead of one. The entire two-day battle of September 1863 is re-created in 13 turns. The larger strategic display now shows the battlefield in 40 X 20 squares, while the tactical display lets players zoom in for a more detailed view.

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ST
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ST Disk Subscribers: For instructions on how to transfer Antic ST programs to 3½-inch disk, see ST Help File on Side B of monthly disk. ST programs from previous issues are available in 3½-inch format from The Catalog.



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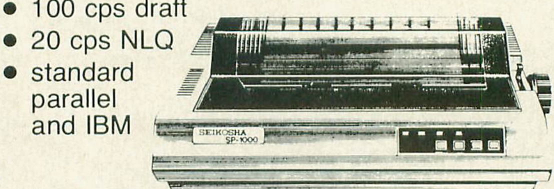
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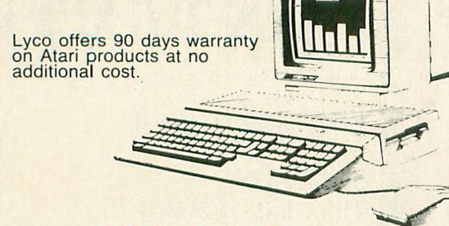
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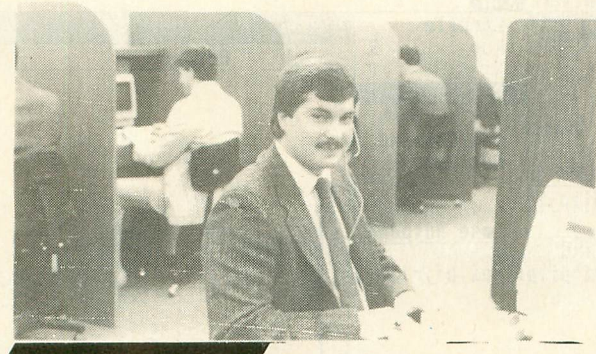
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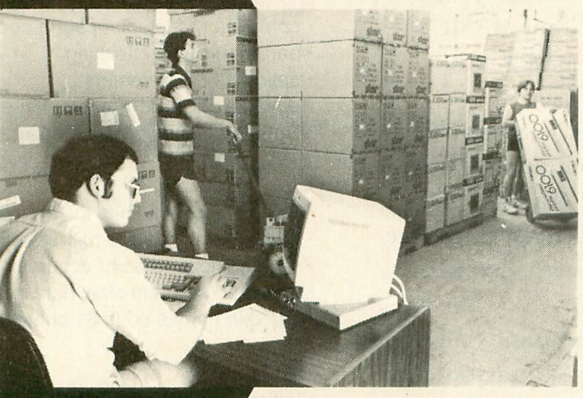
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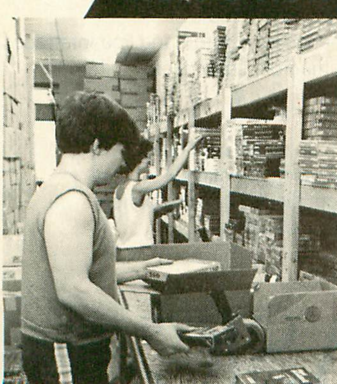
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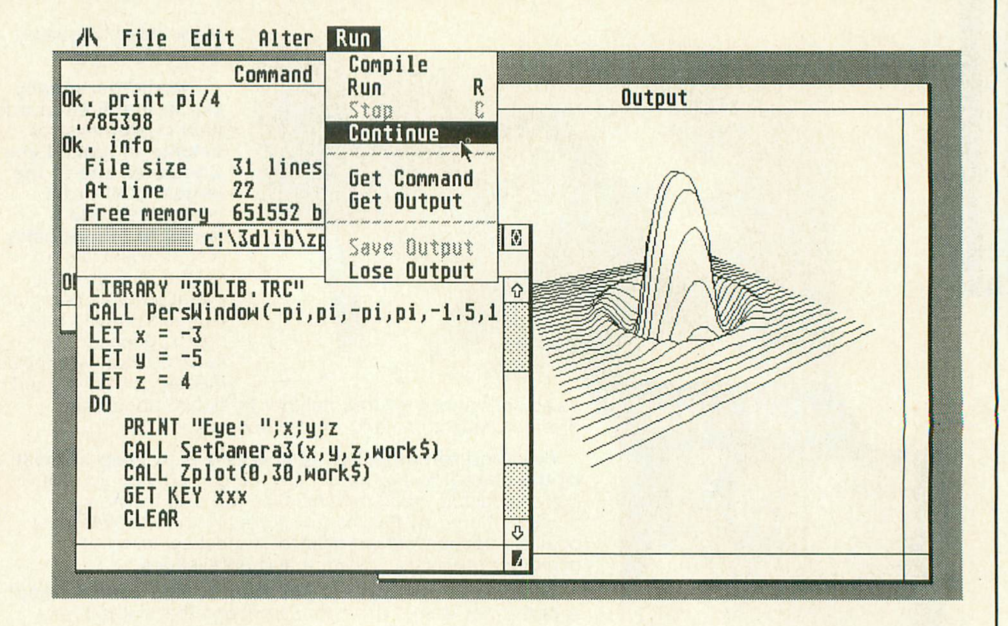
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Dollars And Sense

Home financial management on your ST

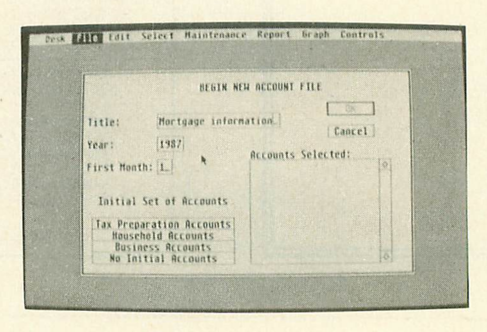
reviewed by Stephen Roquemore

In the past year and a half since the ST was introduced, there has been a multitude of word processors, spreadsheets, databases, and other productivity software released, more than enough to make the ST a solid entry in the personal computer marketplace. However, there is one category of software that, until now, has seen almost no products: home finance packages.

Recently that situation has changed. Monogram Software has released **Dollars & Sense** for the ST computers. This program has made a name for itself on the Macintosh and the IBM PC, and now promises to bring powerful, easy-to-use home finance programming to the ST.

The package comes in a large green box that contains a 130-page manual, with a vinyl insert for the two single-sided program disks and a brochure containing Atari-specific operating tips. You should thoroughly read the manual before attempting to use the program, especially if you are new to computing. You should also read the brochure in conjunction with the manual.

The manual is generally well-written, in clear and concise language. It has an interesting preface, a table of contents with indexing markers on the page edges (a nice aid to finding the manual section), and an index. It also contains a glossary of terms, for those not familiar with



"computerese." It begins with a basic discussion of the theory behind financial records management as applied by Dollars & Sense. A first-time tutorial follows, and should be followed at the keyboard before setting up your own system. Several sample applications are described next, including credit card management, managing stocks and bonds, routine bill-paying, and others. The next section describes each menu and the processing involved with each choice. There are also three appendices dealing with check ordering, Account Sets, and Error Assistance.

There are a few problems in the manual; in several places it refers to terms that apply only to the Macintosh version. It tells you in various places to "click on the Eject," which the ST does not have. It also tells you that the program is on two double-sided disks, but they are on single-sided disks for the ST. These quirks are very minor, however, and after reading through the manual once or twice should present no problem to you.

The reason for the two disks is that all of the necessary code could not be placed on a single-sided disk. The Start-up Disk contains all the modules you need to boot the system, and the other (System) Disk contains the main program modules. You *must* use the Start-up Disk to boot the system. It contains Atari GDOS version 1.1, and the program uses some of its features. Once the system is booted, you insert the System Disk, open it and double-click on the DAS.PRG file to run the program. If you have a double-sided drive, you may copy two of the files on the System Disk to the Start-up Disk, and thus have only one program disk to worry about. The software is not copy-protected, and the manual recommends that you make backup copies of both disks and place the masters in safekeeping.

You must create a separate Data Disk to contain the Accounts File. The First Time Tutorial section leads you through this process very easily. Once you've done this, you can start setting up your own categories or use one of the supplied sets. After following the tutorial completely through, starting up your own system will be a breeze.

There is a problem when creating your own Accounts: You are *not* allowed to enter beginning balances for Income or Expense Accounts! This forces you to enter all transactions

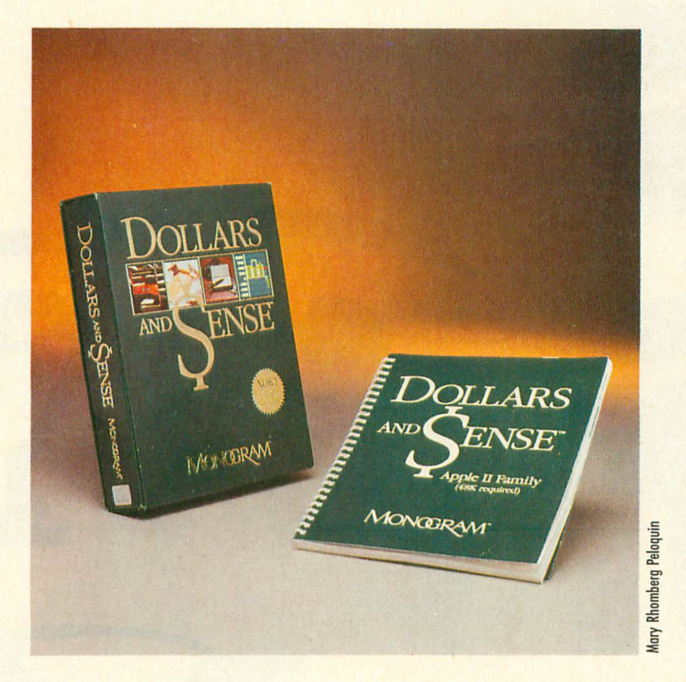
from the beginning of your fiscal year, or to go through gyrations with a dummy set of accounts just to set up the beginning balances. Monogram should do something about this; most users will *not* be starting up their system at the beginning of the year (unless, of course, they start it with a date other than 1/1/).

Next, you will enter NEW Transactions using either a CHECKING, ASSET, or LIABILITY Account. You can also Edit PAST Transactions and change data in them. By doing this, and not saving them back to disk, you can do "what-if" projections. You can enter transactions with distribution to multiple accounts also, as with mortgage payments or checks to Cash.

You can modify Account Definitions, add to the list, or delete them unless they have already been used. You can create up to 100 sets of 25 Automatic Transactions for repeating items such as mortgage and utility payments. These can be recalled by name, modified, and saved to the Transaction file at any time. These make it much faster to process your recurring payments and deposits. Automatic Teller transactions are entered as "Miscellaneous." You may also reconcile your checkbook(s) easily with the Reconcile Statement Menu option.

The Maintenance Menu allows check writing, entering check account information, deleting Auto Transaction Sets (not recommended), and setting up new or modified "Composite" Accounts. These are just labels which group together accounts which you select, for the purpose of producing graphs. You can have up to 12 accounts in each Composite. The Graphs Module won't allow more than 12.

The Reports Menu allows you a *very* extensive choice of reports and options. There are several kinds of reports, each with several choices concerning data to be included. The Controls Menu allows you to select further options for reporting (and graphing also). You may select Wide or Narrow Reports to screen or printer, you may print any Window to the printer, and the Cleanup Windows function allows you to clear the reports and/or graphs from the screen. You *must* use this option to clear your graphs or reports from the screen, or you will then run into serious problems if you run another graph or report; these problems are related to GDOS. Monogram says that fixes for these glitches will be coming in a month or two, and will be free to registered owners. Just remember to always use Cleanup Windows after every report or graph on screen, and you should be okay. By the way, if you select Wide reports to the printer, some of the right-most data will be chopped off. This is due to a problem in the Controls Menu. The About Controls section (a help screen) tells you there is a Printer Set-Up selection which allows custom printer configuration. This would allow you to set up your printer for compressed mode, for example. However, the Printer Set-Up choice was left off the Controls Menu itself! There is no way to do this that I know of.



Mary Rhomberg Peloquin

The Graphs are very *nicely* done, and they are *fast.* They can also be printed via the Print Window or Output to Printer choices on the Controls Menu. I might mention that all of the reports and graphs are printed in a form of graphics mode on Epson printers (the only ones currently supported) using the features of GDOS. After a report or graph is finished printing, you will have to manually advance your printer to the next Top-of-Page position; the reports will correctly page-skip in multi-page reports, but the last page is not correctly spaced to the perforation or top-of-page marker.

The program will run on a 520 ST with TOS in ROM; the program code itself is over 268K, so I would recommend one megabyte. It will also work fine with one drive, but two are recommended. You could probably make some use of a RAMdisk here also. The use of a hard disk is also supported, and the Atari hard disk driver is supplied on the Start-Up Disk in the AUTO folder. There does not appear to be a way of using a print spooler with Dollars & Sense. There is also a problem when using the Backup option on the File Menu. This option is used just before you Quit, to make a backup copy of the Accounts File. When you run this option, it works correctly, but when it's finished, it causes a reboot of the system and dumps you back on the Desktop in low-res mode! This apparently is also a problem with GDOS. The program should be run in medium-res on a color monitor; it also works on the monochrome monitor.

In summary, I would recommend Dollars & Sense to anyone looking for a powerful, flexible, and easy-to-learn and use home finance program. The problems discussed above are not serious, and Monogram is working on a new release to correct them that will be free to registered owners.

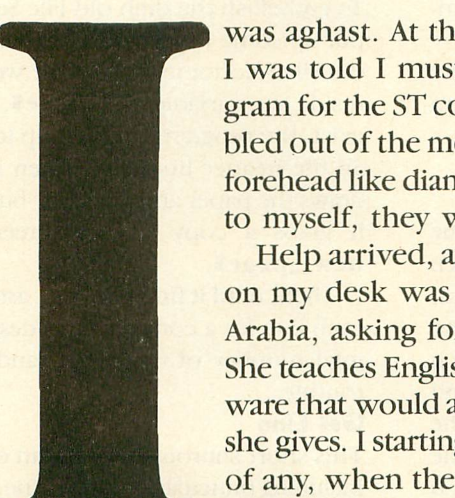
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How many bones are there in the human body?
What was Beaver Cleaver's first name?
Where was the 1962 World's Fair?
What's the national sport of Canada?

Pursuit of the Graf STrivial

A practical teaching aid in GFA BASIC

By Patrick Bass, ST Resource Technical Editor



I was aghast. At the editorial meeting for this issue I was told I must actually write a *practical* program for the ST computer using GFA BASIC. I stumbled out of the meeting with sweat beading on my forehead like diamonds of fear. This time, I thought to myself, they were asking too much!

Help arrived, and in a most unusual way. Sitting on my desk was a letter from a woman in Saudi Arabia, asking for my help in finding a program. She teaches English there, and was looking for software that would automate the multiple-choice tests she gives. I starting writing, to tell her I didn't know of any, when the idea lightbulb went off over my head: Why not write it myself?

SHIFT INTO HIGH

The gears were turning in my pointed head. Practical program plus September issue plus GFA BASIC equals multiple choice quiz program which could be used for anything from a trivia quiz to a final exam.

In a nutshell, the ST program this month works like this: You can make up the quiz using a word processor, such as 1st Word, WordWriter, or MicroEmacs. The STRIVIA program can then read this quiz file, presenting the questions in a logical manner, and keep track of which questions were answered correctly, incorrectly, and also how long it took for each question to be answered.

The person taking the test selects *continued on next page*

the answer by either pressing the key with same number (1-5) or by using the mouse to click on the answer. Pressing or clicking on [RETURN] proceeds to the next question.

At the end of the test the results are either printed directly to the screen, or to a disk file for saving, as determined by the command line in the quiz file.

KEY IN THE LOCK

The key to this program is the format of the quiz file you create. It's both simple and powerful at the same time. As the program stands now, there is room for 500 questions, but feel free to bump that up to 5000 if need be. We've got lots of room left.

The format of the quiz file is actually very simple. Blank lines and REMark lines are ignored. REMark lines have an apostrophe (') or a semicolon (;) as the first character. Blank lines don't. You'll use REMark lines to help you keep track of which question is which.

The file needs to start out with a line for the *header* line, which will appear at the top of each question, and also on the test results printout. Up to ten lines will be accepted; however, only the first line will be displayed. The end of the set of header lines is marked with a single asterisk (*) on a line by itself.

Next, you may type up to three commands the program recognizes. They may all be on a single line, as in the example listing, or each on a separate line. The three commands are: **Show**, **Delay**, and **Display**.

The test-taking program will assume the commands are not active unless you "turn them on" here, by typing them in.

THE SHOW-ME STATE

The command **Show** will direct the program to tell the user whether the answer was correct or incorrect when the [RETURN] key is pressed. The command **Delay** must be followed by a number from 1 to 9999. This command determines how long the program will spend on each question before moving on to the next. The last command is **Display**, which will cause the computer to display the final test results onscreen. If display is not enabled, the program will write the test results to a disk file called "RESULTS".

After the commands line, there must be a line with a single number on it, telling exactly how many test questions there are. In our example file there are three questions.

Now come the questions themselves. The questions may be up to 15 lines of 40 characters each. Each question must end with a single asterisk (*) on a line by itself. After each question, type in five answers, one to a line, and each ending with a carriage return. You must signify the correct answer by placing a "greater-than" symbol (>) in front of it as the first character on the line.

And at this point the file format repeats: questions, answers, questions, answers, and so on, until the test is finished.

TYPING IT IN

While this program is written in GFA BASIC, you should be able to use it with ST BASIC without undue stress in conversion. Carefully type the program in and save a copy to disk before running it. GFA BASIC will not let you make a syntax mistake, but it is possible to misspell a variable name, so be careful. If you have the Antic Monthly Disk you'll find both the GFA BASIC source code *and* the compiled program version (along with the sample quiz) on side B as STRIVIA.BAS, STRIVIA.PRG, and STRIVIA.QIZ

PROGRAM TAKE-APART

Let's examine the program in detail. The top few lines start with an asterisk; they're comments that tell who the programmer is and when he wrote it. We next **@Initialize** the program, and then repeatedly open a quiz file, take the test, and print the results. Before we end an Alert Box will pop up, asking if we want to take another quiz. If we answer no, the program will end.

Initialize

This subroutine takes care of placing proper values inside variables. The **Xbios(4)** call returns the current resolution. Then the routine saves place for strings of questions and answers, and sets **finished** false, since we're not finished yet.

Open Quiz File

To embellish the drab old File Selector box, here we first put up some explanatory text around it, and then show the File Selector itself. The file we choose will be returned inside the variable **Filename$**. If the file actually does exist, the program opens it up to read from it, and drags all the header lines out. Then it clears the screen, and draws the paper and "Return" button on the screen. Next, it grabs a copy of the screen and places it inside **new_page$**.

Then, until it finds another asterisk in the file, it checks each line for a command, as described earlier. It gets the total number of questions, and returns from this subroutine.

Get Line

This short subroutine grabs an entire line from the disk, including punctuation. If the line starts with an apostrophe or semi-colon, or if the line is blank, it is discarded and another line is pulled from the file.

Take The Quiz

This subroutine really does all the work here. It starts off by resetting all the question variables to zero. Then it presents each question we know about onscreen and waits for an answer. It keeps track of the results by placing them inside an array, to be printed out when the test is finished.

TEACHERS OF THE WORLD UNITE

Don't look now, but you teachers out there can easily adapt this program for your own uses. All you need to change is the question file. Just think of the fun you'll have letting your ST give 3000-question tests, and then automatically grading them. Listing on page 77

ST Product News

ST Reviews

INTRODUCTION TO MIDI PROGRAMMING

by Len Dorfman and Dennis Young
Abacus Software, Inc.
P.O. Box 7219
Grand Rapids, MI 49510
256 pages $19.95

Reviewed by Jim Pierson-Perry

One of the main reasons that I bought my ST was to use it to drive a home MIDI-based music studio. MIDI, which stands for Musical Instrument Digital Interface, is both a hardware specification and communication protocol for data transfer between synthesizers, other music generation or processing devices, and computers. Application programs such as sequencers or synthesizer voice editors can be programmed in any computer language from BASIC to Modula-2, as long as you follow the MIDI protocol.

When I heard that the latest volume in the Abacus ST book series was on MIDI programming, I made sure to get one of the first copies at the local computer store. The authors are Len Dorfman and Dennis Young, who wrote the Printware software series (Xlent Software) for the Atari XL/XE and ST. Their most recent work was the ST Music Box, a music editor/player program which relies heavily on MIDI programming.

Unfortunately, **Introduction To MIDI Programming** is geared to a very specific audience—those who are C programmers and wish to work with a Casio CZ-101 synthesizer. Four sample MIDI programs are given in the book. All are in C and include many ST system calls. While the code is well-documented, if you are not a C programmer then this book is probably not for you.

Another concern is that the only synthesizer discussed is the CZ-101. While much of the MIDI coverage in the book is generic to all synthesizers (e.g. note on/off), features such as controllers supported or sending tone parameter data can be highly brand specific. At least one of the four programs given in the book will only run on a CZ-101 or compatible.

The book opens with an overview of synthesizer and MIDI terminology. Early on, the authors describe their rationale for choosing a CASIO CZ-101 to learn MIDI programming. MIDI implementation charts, which describe exactly what features are available and their constraints for any specific synthesizer, are briefly mentioned but not described. This is unfortunate because interpreting these charts is critical to writing all but the most elementary MIDI applications as well as tracking program logic errors.

Chapter two is the most valuable part of the book for budding MIDI programmers. It gives a review of the MIDI protocol, although weighted almost entirely towards the CZ-101 implementation. There is a good explanation of basic MIDI events, such as note on/off and program change; however, features such as controller functions, aftertouch and pitch bend barely receive mention. Curiously, five pages are devoted to describing bits, bytes, and hexadecimal numbers. Anyone who can understand the C code given in the rest of the book does not need this (and those that do are not going to get much further!).

Some MIDI programming applications are finally presented in chapter three. Three Megamax C source listings are given covering: playing scales on the synthesizer, displaying MIDI data to the ST screen, and uploading synthesizer tone data (parameters which set the voice timbre) from the synthesizer to the ST screen and/or printer. The first two programs should work with most synthesizers. The last one is strictly for the CZ-101/1000, since it is based on Casio's specific data structure and nonstandard handshake protocol for tone data transfer, both of which are not used by other synthesizers. The source code of all three programs is well-documented.

The culmination of the book is in chapter four with a presentation of the Alcyon C source code for a MIDI-based autoplayer program designed to work with song files created by the ST Music Box. This is the bulk of the

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MasterPlan™

FINANCIAL SPREADSHEET

MasterPlan™ is an inexpensive, powerful, easy to use spreadsheet written totally within Digital Research's "GEM" operating system. MasterPlan utilizes extensively the graphics and mouse capabilities of the ATARI ST personal computer. HELP is built right into the program. You will be able to create worksheets and graphs within minutes.

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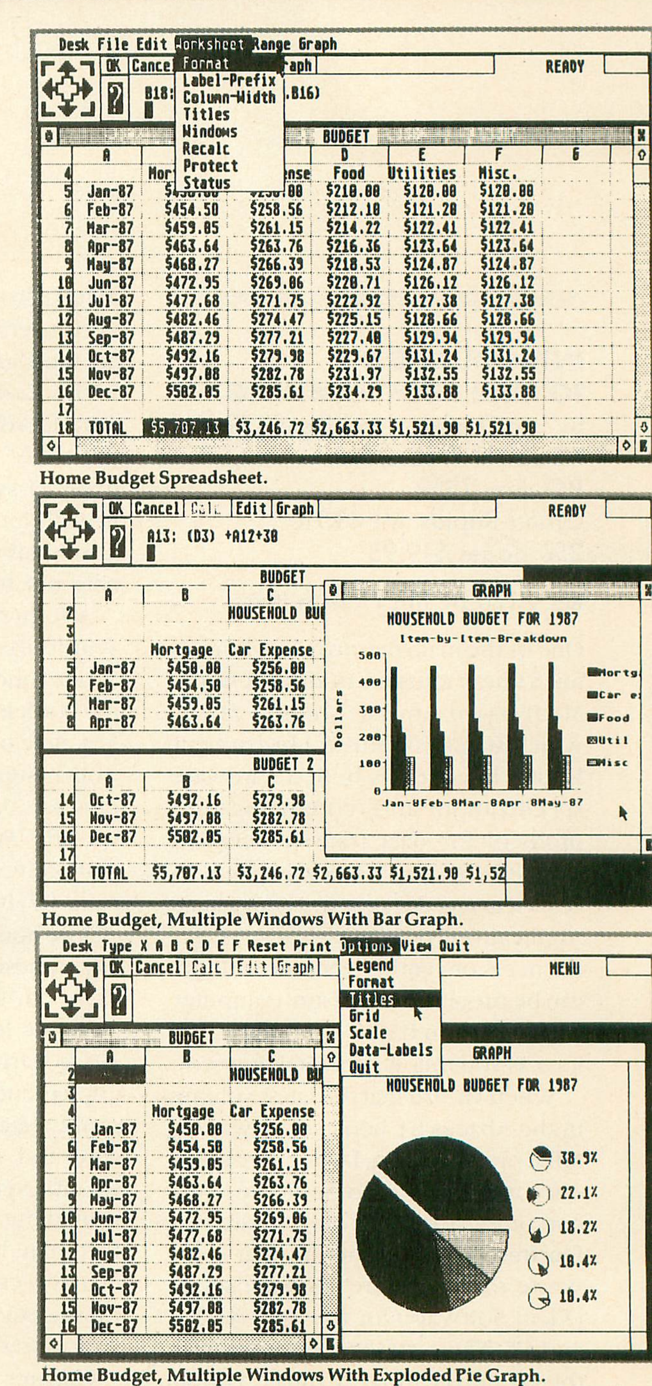
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continued from page 55

book (about 60%) and the preceding three chapters may be viewed as an introduction to this program. The listing is extremely well-documented, although conspicuously absent is an overview of the program structure and logic. Still, for C programmers this is a rich source of code to study. For non-C programmers, forget it!

This book falls short of my expectations for an introductory book on MIDI programming for the ST. I cannot recommend it except to those C programmers who may wish to study the source code listings. It is too narrow in focus to be of value to the general ST user. An accompanying diskette is available from Abacus Software for $14.95 (plus $2.00 shipping/handling) which contains the few programs contained in the book.

MIDI RECORDING STUDIO

Dr. T's Music Software
66 Louise Road
Chestnut Hill, MA 02167
(617) 244-6954
$39.00

Reviewed by Jim Pierson-Perry

The doctor is in! Dr. T that is, and no, a member of "The A-Team" hasn't graduated from Med School. Dr. T is a long-respected MIDI software company that has now turned its sights on the ST as the new "musician's computer." They have recently released a first wave of programs ranging from patch editors to sequencers, and promises more yet to come.

The **MIDI Recording Studio** (MRS) is Dr. T's entry level sequencer program. It is the most musically powerful sequencer currently available for the home/hobbyist ST MIDI market. Not only that, but it is also the least expensive; a true "power without the price" offering! MRS is a full part of the Dr. T's sequencer family. Music files created with MRS are upwardly compatible with the professional-level Keyboard Controlled Sequencer and The Copyist, a scoring and musical transcription program.

MRS functions as the software equivalent of an 8-track tape recorder for standard record/playback uses. More detailed control over individual musical or controller events, such as play a note or apply pitchbend, comes from editing a MIDI event table. This is the equivalent of using a word processor on the musical data and is extremely powerful. The program requires TOS in ROM, is heavily copy-protected, and will run with either a monochrome or color monitor.

There are two separate parts to MRS: real-time music entry and music data editing. Each has an individually tailored operations screen. The input screen mimics a tape recorder with control buttons for record, play, pause, and stop. The screen top shows the current status of the eight available tracks (each of which can contain data for one or all 16 MIDI channels). Each track can be named (eight characters) and heard in ensemble with all other active tracks, played solo, or muted.

The program boots up to the music entry screen with track one set up to begin recording as soon as it receives any MIDI data. Useful options for real-time music entry include filtering the input MIDI stream to remove controller or aftertouch data, and merging the input data with program output to allow use of a master keyboard driving slave synthesizer units. Recording/playback can be done with either the ST or an external MIDI clock (e.g. drum machine) as the timing control. Playing tempo and beats per measure are both widely variable under user control. An audible and visual metronome operates during recording. When you finish recording, press the right mouse button—the track begins playback and the next empty track is turned on ready to record. This cycle continues so that by track eight you have the previous seven tracks in simultaneous playback.

After laying down the tracks, it's time to switch over to the editor for touch up work and enhancements. This screen shows the table of MIDI events for a selected track and can be easily edited to correct wrong notes, revise timings, etc. There are also a number of powerful musical operations which you can invoke, such as pitch transposition and inversion, velocity scaling (to give a volume fade in/out effect), time-correct the MIDI events, time-reverse to have notes played backwards ("Paul is dead"), and compressing or expanding the playing time of the overall track. You can do additional event editing to give step-time entry into the MIDI event table. This is useful for entering complex passages that might be hard to do in real-time and equally applies to tempo or controller changes as well as actual notes.

The editing screen also allows for some needed track-based operations such as copy/paste, backup, delete/clear and naming. Another useful option is to split a track on the basis of note into two tracks which can then be assigned to separate MIDI channels. The reverse operation of track merge is not supported. The entire MIDI event table for each track can be printed to give documentation. A MIDI slow option is also available which slows down the MIDI out transmission rate, which is needed by some synthesizers such as early Yamaha DX-7s.

Now for the flip side, a couple of relatively small complaints. First, MRS does not use the standard GEM interface—specifically, it does not support desk accessories. I am annoyed by this as there are now several desk accessory implementations of MIDI instrument set-up programs. It would be nice to be able to use these

continued on next page

to change synthesizer patch banks or load new drum machine files without having to drop out of the sequencer program. You could also use these accessories to provide file handling capabilities not built into MRS, such as format, rename and delete.

A minor complaint is that there is no direct user control over track assignment—you always get the next empty track. I like to be able to group tracks by function (drums, rhythm, lead) which helps me to keep my editing under control. Another point is that the length of the overall piece is determined solely by the length of track one. Make sure you allow plenty of time to get in everything planned for the remaining tracks! Finally, while great for most situations (including live on stage), there are features lacking which are needed for more professional applications (such as MIDI song pointer, punch in/out); these are found in Dr. T's professional-level sequencer.

All in all, this program gets superlative marks for performance and sheer number of useful features. After many hours of use in my home MIDI studio, I strongly recommend MRS as the best Atari ST sequencer program for home or hobbyist use. It is easier to use and offers more features than other programs costing three or four times as much.

PHANTASIE II

SSI Software
1046 N. Rengstorff Ave
Mountain View, CA
(415) 964-1353
$39.95

Reviewed by Sol Guber

What makes for a good fantasy adventure game? It must have the complexity to allow you to immerse yourself into a believable fantasy world, and it must give you sufficient choices and options to allow you to battle your way out of tight situations. **Phantasie II** fulfills both these criteria.

Phantasie II uses a similar structure to other adventure games—the old Akira Kurosawa "Seven Samurai" formula. You must gather a group of six adventurers and clothe, arm, and defend them. You have a choice of body types including lizard men and minotaurs, as well as the normal humans, elves and dwarfs. Each body type has certain skills and defects, and your party must be varied enough to allow for the maximization of skills. Once you have gathered your party, you leave the security of the town to venture into the wilds of Ferronrah.

Phantasie II uses only a mouse and dialog boxes for all of your choices—how you fight, player characteristics, movement, whatever. There is a menu bar at the top of the screen, whose choices vary depending on the circumstances. The use of the mouse is very effective. You choose the characteristics of your party by clicking the mouse on the proper spot. You only use the keyboard to enter the names for the adventurers. Once you are on your adventure, you'll quickly notice the programming skills of Phantasie II. The graphics of the town and countryside—grass, trees, pathways and water—are superb.

The purpose of any adventure is to find gold, gain enough experience to not be killed easily, and to kill and destroy monsters. The battles in Phantasie II are extremely well represented. You have several options every time you encounter a group of monsters. You can beg for relief, threaten, attack, greet, or flee. Each tactic has its place. If you decide to attack, the highly imaginative monsters try to defend their turf. Each of the 78 different monsters uses two sets of graphics.

Besides deciding how to join in battle, you, as the leader of the band, also have additional choices. Each time you begin a battle, you are allowed to determine how each of the combatants in your party will fight back. They can do anything from parry (a good defensive move for the wounded), to attack, slash or even throw rocks.

Once a battle has begun, you can call it off in the middle by fleeing or by begging for mercy. If you win, you receive experience points and gold. As you gain experience points, extra training is available, to allow for the building up of your character. You use the gold to buy better equipment, training and lodging at a local inn.

There are many things that set this game off from some of the other adventure games. First, it is not copy-protected. You can put it on your hard disk and it will run well. (Another copy-protection method is used to limit the free access of this game. Every so often the program asks you a question *specifically* from the manual—guess incorrectly, and the program gets nasty.) Phantasie II allows for the distribution of gold and experience to be at the judgment of the player. This is quite useful for helping some of the weaker characters build up their strength and become more powerful. It also has the ability to print out a listing of the characteristics of your party to refer to in time of battle and to make other choices. There is no time element in the battles.You make the choices of how you want to fight and then do so. As the battle progress, you can see on the screen the damage to both the monster and your party. Finally there is the selective ability to save the game. This way, you can save the game, get killed, and you have not permanently lost your characters.

Phantasie II is a game of medium difficulty. It should take you no more than three hours or so to build up your characters to the point where they will not be killed indiscriminately by any monster that just happens along. It is very fun to play, and you will spend much time solving the puzzles.

ST New Products

By Gregg Pearlman, Antic Assistant Editor

SSI HITS—NEW FOR THE ST

Strategic Simulations Inc. has created Atari ST versions of three of its most popular games, **Wizard's Crown**, **Rings of Zilfin** and **Colonial Conquest**.

In Wizard's Crown, a fantasy adventure game, you'll have to survive detailed treks and travails in dungeons and castles to retrieve a magic crown. (And keep your eyes peeled for high-resolution games-within-games.) Wizard's Crown has five levels and over 80 hours of play for intermediate role-playing gamers.

Rings of Zilfin uses strong, vividly animated window graphics as you seek the missing rings that will release the land of Batiniq from the cruel Lord Dragos. You'll go *into* buildings by using a new kind of animation that provides screen insets, zooms into room interiors and provides scrolling landscapes keyed to a strategic map and flashing character locator.

Colonial Conquest lets players relive the time when Great Britain, France, Germany, the United States, Russia and Japan each pursued dreams of dominance through colonial expansion. Bleed the people dry: tax them for espionage money or funds for subversion of minor powers or buying armies and navies. Conquer as many minor nations as possible. A great game for the Machiavellian!

$39.95 each. Strategic Simulations Inc., 1046 North Rengstorff Avenue, Mountain View, CA 94043. (415) 964-1353. PRESS.

MINIGOLF AND BRIDGE

Minigolf ($19.95) places you on one of three tough miniature golf courses, each of which places various obstacles in your path. The game tracks up to four players and includes an editor to create or modify your own courses. Courses are designed to conform to professional and tournament standards.

The bidding in **Bridge** 5.0 ($34.95) is improved over its predecessor, Bridge 4.0, and the program stores interesting hands on disk for replay and gives you the option of choosing the number of high-card points to be dealt. You can also let the computer bid or play for you.

Artworx Software Company, Inc., 1844 Penfield Road, Penfield, NY 14526. (800) 828-6573. PRESS.

MASTERPLAN

Many commands in this powerful GEM-based spreadsheet are identical to those in Lotus 1-2-3 (version 1A)—but the program's easy to use. **MasterPlan** reads and writes Lotus and VIP Professional data files while making great use of the ST's graphics capabilities. Features include use of icons for easier executions, multiple windows, color business presentation graphics and hard disk support.

$129.95. ISD Marketing, Inc., 2651 John Street, Unit 3, Markham, ON L3R 2W5. (416) 479-1880. FINAL.

AND EVEN MORE FROM MICHTRON

It's the 1990s, and a new breed of shuttle has been introduced with simplified controls and the ability to land at several locations. In **Shuttle II** ($39.95), you wear the hats of mission control officer and flight commander as you repair a disabled communications satellite.

In **Perfect Match** ($39.95), 12 questions and 12 answers are dealt face down on your screen. Each player picks a card and tries to match it with its respective question or answer. Questions cover World War II, science, United States presidents, the Bible, sports, etc.

With **GFA Draft** ($99.95), a two-dimensional drawing program, you can design circuits, architectural plans, technical designs—or you can just doodle. Drawings can be manipulated with window functions, changed and then changed back without destroying the original conception, and they can be printed on any printer or plotter to scale and in color. GFA Draft allows drawings of up to 255 layers, 10 of which can be shown at once.

SuperConductor ($79.95), a 16-track MIDI sequencing package, lets you filter, transpose, edit, mix and quantize music played through a synthesizer attached to the ST MIDI ports. Its editing process is so simple that you can make edits with a word processor in the "Systems Exclusive" mode. SuperConductor can accomodate any number of tempo changes in a piece, and you can compose entire pieces without having to enter notes on the keyboard.

MichTron, 576 South Telegraph, Pontiac, MI 48053. (313) 334-5700. PRESS.

MUSIC TO COMPUTE BY

The Copyist ($195), a transcription and scoring program, reads and writes Dr. T's KCS and MRS files, allowing for a truly interactive method of composition. The **4-Op Deluxe** patch editor/librarian ($99) includes editors for all four-operator Yamaha synthesizers, including the TX-81Z, FB01, DX100, DX27 and DX21. Also included is a program which converts DX100 voices to FB01. Similar versions are available for the Yamaha DX7/TX7, Casio CZ series, Kawai K3/K3M and Lexicon PCM-70.

Dr. T's Music Software, Inc., 220 Boylston Street, Suite 306, Chestnut Hill, MA 02167. (617) 244-6954. PRESS.

NEW MULTI-FORTH PRICE

Now $89, **Multi-Forth** is an interactive programming environment specifically designed for the ST. GEM and TOS are included as well as multi-tasking, text editing and runtime application development capabilities.

Creative Solutions Inc. 4701 Randolph Road, Suite 12, Rockville, MD 20852. (301) 984-0262.

GAMES FROM THE ATARI PSYG

In **Barbarian**, an animated fantasy adventure, you are Hegor the Barbarian—walking death to dragons and monsters. Your task is to enter the underground world of Durgan, which resides under the evil thumb of Necron, whose lair must be destroyed. **Terrorpods**, a strategy arcade game, pits you against the invading Tripod forces on a 3-D playfield with perspective scrolling.

$39.95. Psygnosis Limited, First Floor, Port of Liverpool Building, Pier Head, Liverpool L3 1BY, United Kingdom. 051-236 8818. PRESS.

BASICALLY TRUE, VERSION 2

True BASIC, version 2.0, offers modules and graphics support that truly takes advantage of the ST's graphics capabilities, and, because it's a compiler, it's *much* faster than ST BASIC.

$99.95. True BASIC Inc., 39 South Main Street, Hanover, NH 03755. (603) 643-3882. PRESS.

continued on next page

BECKEMEYER MULTITASKING

The five packages in Beckemeyer Development Tools' point-of-sale software, **Advanced Business System** (ABS), range from accounting software to bar code readers. ABS100 ($2,495) includes an electronic cash register, inventory control, and customer and vendor files. ABS101, General Ledger Accounting Software ($395), features profit/loss statements, balance sheets, check writing and automatic double-entry accounting.

No keyboard is needed with ABS102, the Color Touch Screen Workstation ($2,995)—just touch the screen. The all-steel cash drawer (ABS103, $295) opens only when the computer tells it to, and ABS104, the bar code reader ($635) scans the bar codes on merchandise to input the correct item number.

Beckemeyer Development Tools, 478 Santa Clara Avenue, Oakland, CA 94610. (415) 452-1129. PRESS.

NO MORE "GUNS OF NAVARONE" PUNS

The **ST Toolbox** uses files created by the Navarone ST Sound Digitizer and plays them back through the sound chip in your ST—you no longer need an external speaker. Several development tools let you incorporate digitized sounds into your own programs, and the (Megamax) C source code is provided.

$39.95. Navarone Industries, Inc., 21109 Longeway Road, Suite C, Sonora, CA 95370. (209) 533-8349. PRESS.

A PARTNER FOR PUBLISHING PARTNER

The Font Factory's four **Clip Art** disks for Soft Logik's Publishing Partner contain both medium- and high-resolution DEGAS-compatible files with more than 100 pictures and a short documentation file. Disk 1 ranges from desk and office paraphernalia to school-related graphics. Disk 2 has religious, sports and small business graphics. Disk 3 has vehicles, medical, patriotic, clothing-related and musical graphics. Disk 4 features animals, food-oriented graphics, borders and Western-style graphics.

$19.95 each. The Font Factory, P.O. Box 17422, Phoenix, AZ 85011. PRESS.

K-ROGET

This GEM-based online thesaurus operates as a desk accessory so you can use it with any word processor. **K-Roget** includes over 150,000 words and phrases, traps phonetic misspellings, amd its Backtrack facility lets you retrace previous selections.

About $85 (U.S.). Kuma Software, 12 Horseshoe Park Pangbourne, Berkshire RG8 7JW, England. 07357-4335. PRESS.

GAMBLE AWAY YOUR ENCODED FILE

Big Mike's Slot Machine Parlor not only keeps you in front of a one-armed bandid for hours but also lures you to the blackjack tables and draw or stud poker machines. Pull-down menus make it easy to switch games, and a loan shark hangs around the casino in case you're suddenly gripped with the urge to have your kneecaps removed.

Filesafe asks you to enter a private password to encrypt or decrypt your private files—ideal where the same computer or disks are used by several people. The batch file feature allows fast processing of up to 12 files at once.

$29.95 each. Michael Nowicki, P.O. Box 4775, San Jose, CA 95150. (408) 286-0379. PRESS.

REALLY BASIC

Real BASIC executes BASIC code 20-100 times faster than ST BASIC while maintaining full compatibility. An in-line Motorola-compatible assembler lets you switch to assembly language without leaving the interpreted BASIC environment. Real BASIC features an integrated, powerful full-screen editor and extended graphics instruction.

$69.95. Computer Crossware Labs, Inc., 516 Fifth Avenue, Suite 507, New York, NY 10036. (212) 644-2591. PRESS.

SHUT UP AND DEAL

Home Casino Poker features video draw poker and a lightning-fast stud poker game for one to four players each. In stud, choose from any of six computer-controlled opponents. Home Casino Poker works with keyboard and/or joystick.

$34.95. Dubl Dubl Funware, P.O. Box 06401, Portland, OR 97206. (503) 771-7833. PRESS.

BORROWED TIME

Someone wants you dead in this adventure game from Activision. As if that's not enough, you must find your would-be murderer in less than a day, but the longer you look, the better a target you become, as you try to live on **Borrowed Time**.

$49.95. Activision Inc., P.O. Box 7826, Mountain View, CA 94039. (415) 960-0410. PRESS.

ST GOES TO HOLLYWOOD

My Letters, Numbers and Words, designed to encourage children aged 2-6 to learn their ABCs, numbers 1-10 and the concept of words, is featured in MGM's "Walk Like a Man" starring Howie Mandel as a man who must learn to read and write after spending 25 years in the wilderness. (He's using the Apple II version, by the way.) My Letters, Numbers and Words has three multi-level activities, special audio and animated graphics.

$39.95, Stone and Associates, 7910 Ivanhoe Avenue, Suite 319, La Jolla, CA 92037. (619) 459-9173. PRESS.

THREE FROM REEVE

The ASCII- and DEGAS-compatible **News Station ST** ($34.95) features text entry and graphics modes, clip art, an undo command and adjustable margins and line spacing. **Disk Master** ($29.95) features a powerful sector editor, backup utility, custom formatter and a graphics display that shows you exactly what your disk drive sees. Finally, colorful graphics and realistic action on a 3-D ice rink is what you can expect in **World Class Hockey** ($29.95).

Reeve Software, 29W150 Old Farm Lane, Warrenville, IL 60555. (312) 393-2317. PRESS.

*New ST product notices are compiled from information provided by the products' manufacturers. **Antic** assumes no responsibility for the accuracy of these notices or the performance of the product. Each mention is followed by a code word indicating that, at press time, **Antic** had seen a FINAL marketable version, near-final BETA, earlier ALPHA, incomplete DEMO, or PRESS release.*

SOFTWARE LIBRARY

DISK SUBSCRIBERS: Programs for 8-bit Atari computers can be used immediately. Just follow instructions in the accompanying magazine articles. ST Owners: See monthly disk's ST Help File for instructions on how to transfer programs to 3-1/2 inch disk.

DOS COMPATIBILITY: All 8-bit programs published by **Antic** are tested to work with Atari Disk Operating System (DOS) 2.0S and 2.5—*not* with the incompatible DOS 3.0. DOS 2.0S is available on each Antic Monthly Disk. Copy the DOS.SYS and DUP.SYS files.

TYPING SPECIAL ATARI CHARACTERS

Antic printed program listings leave a small space between each Atari Special Character for easier reading. Immediately below you will see the way **Antic** prints all the standard Atari letters and numbers, in upper and lower case, in normal and inverse video.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789 0123456789

The Atari Special Characters and the keys you must type in order to get them are shown in the two boxes below.

NORMAL VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	CTRL ,		CTRL S
	CTRL A		CTRL T
	CTRL B		CTRL U
	CTRL C		CTRL V
	CTRL D		CTRL W
	CTRL E		CTRL X
	CTRL F		CTRL Y
	CTRL G		CTRL Z
	CTRL H		ESC ESC
	CTRL I		ESC CTRL −
	CTRL J		ESC CTRL =
	CTRL K		ESC CTRL +
	CTRL L		ESC CTRL *
	CTRL M		CTRL .
	CTRL N		CTRL ;
	CTRL O		SHIFT =
	CTRL P		ESC SHIFT CLEAR
	CTRL Q		ESC DELETE
	CTRL R		ESC TAB

INVERSE VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	CTRL ,		CTRL X
	CTRL A		CTRL Y
	CTRL B		CTRL Z
	CTRL C		ESC SHIFT DELETE
	CTRL D		ESC SHIFT INSERT
	CTRL E		ESC CTRL TAB
	CTRL F		ESC SHIFT TAB
	CTRL G		CTRL .
	CTRL H		CTRL ;
	CTRL I		SHIFT =
	CTRL J		ESC CTRL 2
	CTRL K		ESC CTRL DELETE
	CTRL L		ESC CTRL INSERT
	CTRL M		
	CTRL N		
	CTRL O		
	CTRL P		
	CTRL Q		
	CTRL R		
	CTRL S		
	CTRL T		
	CTRL U		
	CTRL V		
	CTRL W		

Whenever the CONTROL key (CTRL on the 400/800) or SHIFT key is used, *hold it down* while you press the next key. Whenever the ESC key is pressed, *release* it before you type the next key.

Turn on inverse video by pressing the Reverse Video Mode Key. Turn it off by pressing it a second time. (On the 400/800, use the Atari Logo Key instead.)

Among the most common program typing mistakes are switching certain capital letters with their lower-case counterparts—you need to look especially carefully at P, X, O and 0 (zero).

Some of Atari Special Characters are not easy to tell apart from standard alpha-numeric characters. Usually the Special Characters will be boxed. Compare the two sets of characters below:

SPECIAL			STANDARD		
		CTRL F			/
		CTRL G			SHIFT +
		CTRL N			SHIFT −
		CTRL R			−
		CTRL S			+

HOW TO USE TYPO II (8-BIT)

TYPO II automatically proofreads **Antic**'s type-in BASIC listings for 8-bit Atari computers. It finds the exact line where you made a program typing mistake.

Type in TYPO II and SAVE a copy to disk or cassette. Now type GOTO 32000. When you see the instruction on the screen, type in a single program line **without the two-letter TYPO II code** at the left of the line number. Press the [RETURN] key.

Your line will reappear at the bottom of the screen with a two-letter TYPO II code on the left. If this code is not exactly the same as the line code printed in the magazine, you mistyped something in that line.

To call back any line previously typed, type an asterisk [*] followed (without in-between spaces) by the line number, then press [RETURN]. When the complete line appears at the top of the screen, press [RETURN] again. This is also the way you use TYPO II to proofread itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000.

To remove TYPO II from your program, type LIST "D:FILENAME",0,31999 [RETURN] (Cassette owners LIST "C:). Type NEW, then ENTER "D:FILENAME"[RETURN](Cassette—ENTER "C:). Your program is now in memory without TYPO II and you can SAVE or LIST it to disk or cassette.

Don't type the TYPO II Codes!

```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLO
   SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "K":POSITION 11,1:? "TYPO II "

EM 32050 TRAP 32040:POSITION 2,3:? "Type
   in a program line"
HS 32060 POSITION 1,4:? " ":INPUT #2;LINE
   $:IF LINE$="" THEN POSITION 2,4:LIST B
   :GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LIN
   E$(2,LEN(LINE$))):POSITION 2,4:LIST B:
   GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:? " ";
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
ET 32120 ? "K":POSITION 11,1:? " TYPO II 
   ":POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3;LINE$:IF
   LINE$="" THEN ? "LINE ";B;" DELETED":G
   OTO 32050
VV 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
   ANS+(C*ASC(LINE$(D,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE);CHR$
   (LCODE)
VG 32220 POSITION 2,13:? "If CODE does no
   t match press  RETURN  and edit line a
   bove.":GOTO 32050
```

---

powerful calculator prints out too

DESKTOP NUMBER-CRUNCHER

Article on page 26

LISTING 1

Don't type the TYPO II Codes!

```
AB 1 REM PRINTING DESK CALCULATOR
NO 2 REM BY JAMES W. BROWN
GF 3 REM (c) 1987, ANTIC PUBLISHING
YU 100 DIM CH$(1),PR$(18),T$(15),E$(15)
ZD 110 DIM N$(36),D$(10),P$(6),BL$(15)
QO 120 DIM PX$(2),V$(6),KPAD$(16)
EF 130 DIM STM(6,7),R$(24),OPCHR$(4)
HI 200 DATA 18,7,19,6,20,7,21,6,22,7,23,6
   ,26,0,27,0,28,0
RW 210 DATA 0,3,3,3,6,6,6
MP 211 DATA 0,0,1,3,4,4,6
MM 212 DATA 1,1,1,4,4,4,4
PT 213 DATA 0,2,2,3,5,5,6
RA 214 DATA 2,2,2,5,5,5,5
PN 215 DATA 0,1,2,3,5,5,6
AI 216 DATA 0,1,0,0,0,0,0
QF 217 DATA 0,2,2,3,5,5,6
SN 300 BS=126:DEL=254:ESC=27:EOL=155
FI 305 SDMCTL=559:SHFLOK=702:CRSINH=752
IK 310 GRAPHICS 0:POKE SDMCTL,0
SQ 315 POKE 708,184:POKE 711,184
EG 320 POKE 710,114:POKE 712,114
DR 325 DLIST=PEEK(560)+256*PEEK(561)
QH 330 FOR I=1 TO 9
HD 335 READ X,Y:POKE DLIST+X,Y
GB 340 NEXT I
XS 350 FOR J=0 TO 7:FOR I=0 TO 6
CK 355 READ X:STM(I,J)=X
FE 360 NEXT I:NEXT J
FO 365 BL$="               "
NH 370 D$="floatfixed":P$="offon "
CR 375 V$="RPNALG"
UL 380 R$="RET - E -> A           "
KA 385 OPCHR$="+-*/"
DE 400 ? "      ┌────────────────────────────
   ──┐"
AL 405 ? "      │ PRINTING DESK CALCULATOR
    │"
OH 410 ? "┌──────────────────────────────────
   ────────┐";
ST 420 ? "│ A  - Advance paper  N - Note
   to prt│";
MP 430 ? "│ C  - Clear entry    P - Print
   er ---│";
LD 440 ? "│ D  - Decimal -----  S - Subto
   tal   │";
AD 450 ? "│ MC - Clear Memory   T - Total
   /clr A│";
UP 460 ? "│ MR - Recall M -> E  V - Versi
   on ---│";
BK 470 ? "│ MS - Store  E -> M  RET - E -
   > A   │";
```

continued on next page

```
JH 480 ? "│ M+ - Add E to M      ESC - Reset    │";
HM 485 ? "│ M- - Subtr E from M    + - * / % = .│";
BZ 490 ? "└──────────────────────────────────────┘";
DO 495 ?
HS 510 POSITION 1,13:? "MEM 0";
NH 520 POSITION 1,14:? "ACC 0";
QV 530 POSITION 1,15:? "ENT 0";
PM 540 OPEN #1,4,0,"K:"
HU 550 POKE SDMCTL,34:POKE CRSINH,1
PE 810 KPORT=2:OLDKC=0
XX 820 KPAD$="D456N789Y1230.+-"
JB 830 KPAD$(1,1)=CHR$(DEL)
MJ 900 DPT=0:GOSUB 4200
RQ 910 PRT=1:GOSUB 4500
KR 920 ALG=1:GOSUB 3700
ZX 990 MEM=0
ZT 2000 REM INIT
UD 2010 STATE=0:TYPE=1
GX 2020 AC=0:ENT=0:MODE=1:P=0:E$=""
MB 2030 OLDOP=1:GOSUB 5500:GOSUB 5700
YA 2040 POSITION 24,14:? " "
BO 3000 REM MAIN LOOP
JO 3005 STATE=STM(STATE,TYPE)
FB 3010 GOSUB 6500:PX$=CH$:TRAP 9000
WN 3015 POSITION 2,16:? BL$;BL$;BL$(1,7);
IT 3020 IF C=BS OR C=DEL THEN 3100
RA 3025 IF C>=ASC("0") AND C<=ASC("9") THEN 3200
TA 3030 IF C>=ASC("A") AND C<=ASC("Z") THEN 3300
QL 3035 IF CH$="+" THEN OP=1:GOSUB 3400:GOTO 3000
RV 3040 IF CH$="-" THEN OP=2:GOSUB 3400:GOTO 3000
RY 3045 IF CH$="*" THEN OP=3:GOSUB 3400:GOTO 3000
UY 3050 IF CH$="/" THEN OP=4:GOSUB 3400:GOTO 3000
QI 3055 IF CH$="%" THEN 3800
BR 3060 IF CH$="=" THEN 4600
WD 3065 IF CH$="." THEN 4800
ZA 3070 IF C=EOL THEN 4900
VS 3080 IF C=ESC THEN 3900
ZY 3099 GOSUB 9900:GOTO 3000
AA 3100 REM DELETE A KEYSTROKE
YI 3110 IF P<1 THEN 3000
WE 3120 P=LEN(E$)-1
DR 3130 IF P=0 THEN E$=""
TQ 3140 IF P>0 THEN E$=E$(1,P)
YY 3150 GOSUB 5000
PZ 3199 GOTO 3000
IS 3200 REM DIGIT
FM 3210 TYPE=2
DF 3220 IF MODE THEN E$="":GOSUB 5100
WW 3230 MODE=0
EC 3240 IF P>8 THEN GOSUB 9900:GOTO 3000
QO 3250 P=LEN(E$)+1:E$(P)=CH$
GZ 3260 GOSUB 5000:IF ENT<>0 THEN 3000
JX 3270 POSITION 5,15:? E$;
QB 3299 GOTO 3000
IX 3300 REM LETTER
YE 3310 IF CH$="A" THEN 4000
AG 3320 IF CH$="C" THEN 4100
PX 3330 IF CH$="D" THEN GOSUB 4200:GOTO 3000
HQ 3340 IF CH$="M" THEN 4300
JE 3350 IF CH$="N" THEN 4400
AB 3360 IF CH$="P" THEN GOSUB 4500:GOTO 3000
NW 3370 IF CH$="S" THEN 4600
ON 3380 IF CH$="T" THEN 4600
DI 3390 IF CH$="V" THEN GOSUB 3700:GOTO 2000
AE 3399 GOSUB 9900:GOTO 3000
EM 3400 REM ARITHMETIC OPERATOR
TO 3405 IF ALG THEN POSITION 24,14:? OPCHR$(OP,OP)
OV 3410 TYPE=0:IF ALG AND (STATE=0 OR STATE=3 OR STATE=6) THEN GOSUB 9900:GOTO 3000
ZI 3420 GOSUB 5100
TN 3430 IF ALG=0 THEN OLDOP=OP
GT 3440 ON OLDOP GOTO 3450,3460,3470,3480
HF 3450 AC=AC+ENT:GOTO 3490
IE 3460 AC=AC-ENT:GOTO 3490
HA 3470 AC=AC*ENT:GOTO 3490
CA 3480 AC=AC/ENT
WT 3490 OLDOP=OP:GOSUB 5200
CU 3499 RETURN
AQ 3700 REM V
NY 3710 ALG=1-ALG
OY 3720 POSITION 36,7:? V$(1+3*ALG,3+3*ALG);
YT 3730 POSITION 24,8:? R$(1+12*ALG,12+12*ALG);
YP 3740 POSITION 24,14:? " "
DA 3799 RETURN
HW 3800 REM %
SC 3810 TYPE=7:IF ALG AND (STATE=0 OR STATE=3 OR STATE=6) THEN GOSUB 9900:GOTO 3000
KB 3820 GOSUB 5100:GOSUB 5200
IS 3830 ENT=0.01*ENT:GOSUB 5500
QN 3899 GOTO 3000
IH 3900 REM ESC
EF 3910 IF PRT THEN LPRINT "***RESET***"
PR 3999 RUN
SB 4000 REM A
OL 4010 IF PRT THEN LPRINT " "
PY 4099 GOTO 3000
SX 4100 REM C
TD 4110 TYPE=1:E$="0":MODE=0:GOSUB 5100
QA 4199 GOTO 3000
TJ 4200 REM D
DT 4210 DPT=1-DPT
FV 4220 POSITION 17,5:? D$(1+5*DPT,5+5*DPT);
CR 4299 RETURN
WX 4300 REM M
JT 4310 GOSUB 6500:PX$(2)=CH$
JF 4320 P=0:MODE=1:TYPE=3+(CH$="R")
XO 4330 IF ALG AND TYPE=3 AND (STATE=0 OR STATE=3) THEN GOSUB 9900:GOTO 3000
BI 4340 IF CH$="C" THEN 6000
KK 4350 IF CH$="R" THEN 6100
LY 4360 IF CH$="S" THEN 6200
RK 4370 IF CH$="+" THEN 6300
TM 4380 IF CH$="-" THEN 6400
DS 4399 GOSUB 9900:GOTO 4300
XJ 4400 REM N
KV 4410 POKE SHFLOK,0:POKE CRSINH,0
DR 4420 POSITION 2,16:? "Enter one-line note:";
QA 4430 POSITION 2,17:INPUT N$
HO 4440 POKE CRSINH,1
FZ 4450 IF PRT THEN LPRINT N$:POSITION 2,16:? BL$;BL$;
EK 4460 IF PRT=0 THEN POSITION 2,16:? "Printer is toggled off!";
YW 4470 POSITION 2,17:? BL$;BL$;BL$(1,8);
QG 4499 GOTO 3000
YF 4500 REM P
NV 4510 PRT=1-PRT
SL 4520 POSITION 36,4:? P$(1+3*PRT,3+3*PRT);
CX 4599 RETURN
OO 4600 REM S, T, or =
QY 4610 TYPE=5+(CH$="T"):SVTYPE=TYPE
UN 4620 IF ALG AND STATE<2 THEN GOSUB 9900:GOTO 3000
FM 4630 IF ALG THEN GOSUB 3400:OLDOP=1
NR 4640 ENT=AC:TYPE=SVTYPE
PP 4650 IF CH$="T" OR ALG THEN AC=0
AM 4660 GOSUB 5200
QH 4670 GOSUB 5700:GOSUB 5500
PS 4680 IF ALG AND TYPE=6 THEN 2000
ZD 4690 POSITION 24,14:? " "
QK 4699 GOTO 3000
BT 4800 REM PERIOD
EU 4810 TYPE=2:IF MODE THEN E$="0.":P=2
GI 4820 IF MODE=0 THEN P=LEN(E$)+1:E$(P)=CH$
CQ 4830 MODE=0:ENT=VAL(E$)
AK 4840 POSITION 5,15:? BL$;
KE 4850 POSITION 5,15:? E$;
UQ 4860 POSITION 2,16:? ENT:POSITION 2,16:? BL$
QO 4899 GOTO 3000
OS 4900 REM ENTER
KW 4910 IF ALG THEN GOSUB 9900:GOTO 3000
IK 4920 AC=ENT:PX$="EN":GOSUB 5200
QQ 4999 GOTO 3000
BH 5000 REM CONVERT ENTRY
XV 5010 IF MODE THEN RETURN
XS 5020 L=LEN(E$):ENT=0
RN 5030 IF L>0 THEN ENT=VAL(E$)
BI 5040 GOSUB 5500
CO 5099 RETURN
TZ 5100 REM CONVERT AND RESET
MM 5110 GOSUB 5000:P=0:MODE=1:E$=""
CQ 5199 RETURN
RS 5200 REM DISPLAY AC AND PRINT ENT
QB 5210 GOSUB 5700:P=0:MODE=1:E$=""
HY 5220 IF PRT=0 THEN RETURN
YA 5230 PR$=STR$(ENT)
BK 5240 IF DPT THEN GOSUB 5400
OR 5250 L=LEN(PR$)
```

```
IO 5260 IF L<15 THEN PR$(L+1,15)=BL$(L+1,
   15)
GB 5270 PR$(16)=" "
AC 5280 PR$(17)=PX$:LPRINT PR$
CS 5299 RETURN
QH 5400 REM FIX DECIMAL POINT
DM 5410 T$=PR$:L=LEN(T$):DP=0:EP=0
NU 5420 FOR I=1 TO L
KY 5425 IF T$(I,I)="E" THEN EP=I
TJ 5430 IF T$(I,I)="." THEN DP=I
FN 5440 NEXT I
AL 5450 IF EP THEN RETURN
NF 5460 IF DP=0 THEN DP=L+1:T$(DP)=".00"
SF 5470 IF DP=L THEN T$(L+1)="00"
EP 5480 IF DP=L-1 THEN T$(L+1)="0"
TC 5490 PR$=BL$:PR$(14-DP,15)=T$(1,DP+2)
CW 5499 RETURN
SS 5500 REM DISPLAY E
ZW 5510 POSITION 5,15:? BL$;
WP 5520 POSITION 5,15:? ENT;
CY 5599 RETURN
YI 5600 REM DISPLAY M
YO 5610 POSITION 5,13:? BL$;
NQ 5620 POSITION 5,13:? MEM;
DA 5699 RETURN
QC 5700 REM DISPLAY A
ZI 5710 POSITION 5,14:? BL$;
HD 5720 POSITION 5,14:? AC;
DC 5799 RETURN
ZC 6000 REM MC
UP 6010 MEM=0
MB 6020 GOSUB 5600:GOSUB 5200
QA 6099 GOTO 3000
FN 6100 REM MR
RZ 6110 ENT=MEM:GOSUB 5500:GOSUB 5200
YO 6120 E$=STR$(ENT)
QC 6199 GOTO 3000
GA 6200 REM MS
UC 6210 MEM=ENT:GOSUB 5600:GOSUB 5200
QE 6299 GOTO 3000
PE 6300 REM M+
SB 6310 MEM=MEM+ENT
MH 6320 GOSUB 5600:GOSUB 5200
QG 6399 GOTO 3000
QC 6400 REM M-
TD 6410 MEM=MEM-ENT
MJ 6420 GOSUB 5600:GOSUB 5200
QI 6499 GOTO 3000
NS 6500 REM GET CHARACTER
NA 6510 POKE SHFLOK,64:POKE 16,112:POKE 5
   3774,112:POKE 77,0
WK 6520 IF PEEK(764)<255 THEN OLDKC=0:GET
   #1,C:CH$=CHR$(C):RETURN
EY 6530 IF STRIG(KPORT-1) THEN OLDKC=0:GO
   TO 6500
OE 6540 KC=STICK(KPORT-1)+1
EE 6550 IF KC=OLDKC THEN 6500
AA 6560 CH$=KPAD$(KC,KC):C=ASC(CH$)
LV 6570 SOUND 0,60,10,8
WZ 6580 FOR I=1 TO 4:NEXT I
PZ 6590 SOUND 0,0,0,0:OLDKC=KC
CZ 6599 RETURN
HY 9000 REM TRAP HANDLER
GR 9010 POSITION 2,16:EN=PEEK(195)
CH 9020 EL=PEEK(186)+256*PEEK(187)
PQ 9030 IF EN=3 THEN ? "Bad value.";:GOTO
    9090
IG 9040 IF EN=11 THEN ? "OVERFLOW.";:GOTO
    9090
IS 9050 IF EN>128 AND PRT THEN ? "Check p
   rinter.";:GOTO 9090
YV 9060 ? "Error ";EN;" at line ";EL;".";
KK 9090 ? "  Press C";
QD 9099 GOTO 3000
LV 9900 REM BUZZ
PH 9910 SOUND 0,55,12,8
VE 9920 FOR I=1 TO 20:NEXT I
IF 9930 SOUND 0,0,0,0
DK 9999 RETURN
```

powerful, versatile, easy-to-use mailing lists

MIGHTY MAILER

Article on page 30

LISTING 1

Don't type the TYPO II Codes!

```
WD 5 REM MIGHTY MAILER
MV 10 REM BY PHILIP BATE, Ph.D.
GZ 20 REM (c) 1987, ANTIC PUBLISHING
CC 30 FILELEN=FRE(0)-1100:DIM FILE$(FILEL
   EN)
YD 40 DIM SUB$(255),RAND$(260),FILENAME$(
   14),EOL$(2),IO$(7),MSG1$(28),MSG2$(24)
   ,MSG3$(84)
HZ 50 EOL$(1)=CHR$(155):EOL$(2)=CHR$(155)
   :MSG1$=" PRESS RETURN FOR MAIN MENU ":
   MSG2$=" PRESS NUMBER OF CHOICE "
JK 60 MSG3$="Press 'E' to print envelopes
    or 'A'    to print addressee on letter
   .          BE SURE PRINTER IS READY"
MJ 70 IO$="hhh[illegible]LV[illegible]"
QE 80 RAND$(1,86)="[illegible]"
KP 82 RAND$(87,172)="[illegible]"
SI 83 RAND$(173,260)="[illegible]"
PN 84 RAND$(200,200)=CHR$(155):ML=ADR(RAN
   D$)
SW 90 REM MAIN MENU
NP 100 GRAPHICS 0:POKE 752,1:POKE 764,255
   :POKE 82,2:POKE 756,226:POKE 702,64:PO
   KE 710,204:POKE 709,0:RAND=0
LD 110 CLOSE #1:OPEN #1,4,0,"K"
MF 120 FILENAME$="D:ADDLIST":GOSUB 1330
NV 130 GRAPHICS 0:POKE 752,1:POKE 764,255
   :POKE 82,2:POKE 756,226:POKE 702,64:PO
   KE 710,204:POKE 709,0:RAND=0
PC 140 ? :? "                 MAIN MENU "
RH 150 ? :? :? "       1 - FIND & PRINT"
GN 160 ? :? "       2 - SCROLL & PRINT"
ZT 170 ? :? "       3 - PRINT LABELS"
YF 180 ? :? "       4 - SCREEN LIST"
VS 190 ? :? "       5 - CHANGE MENU"
SD 200 ? :? "       6 - DIR & LOAD"
LZ 210 ? :? "       7 - MAKE NEW LIST"
JG 220 ? :? :? "       ";MSG2$
ZS 230 A=PEEK(764):IF A=255 THEN POKE 77,
   0:GOTO 230
PX 240 GET #1,A:IF A=255 THEN 240
EE 250 ON A-48 GOTO 270,360,430,490,530,1
   270,940
NA 260 GOTO 130
UA 270 REM FIND ENTRY & PRINT ENVELOPES
YR 280 ? "[illegible]":POKE 702,0:POKE 752,0:POSITI
   ON 2,10:? "Locator for Name/Address to
    display":INPUT SUB$
UO 290 GOSUB 1070
TW 300 GOSUB 1160
AI 310 POKE 702,64:? "[illegible]":? :? MSG3$
HT 320 ? :? "Press  SPACEBAR  to get next
    same name":? :? FILE$(START,RAND+1)
TD 330 POKE 702,64:GOSUB 1000
MP 340 IF A=32 THEN 290
MZ 350 GOTO 130
PF 360 REM PRINT ENVELOPES SERIALLY
MV 370 START=RAND+2:GOSUB 1120
UE 380 POKE 702,64:? "[illegible]":? MSG3$
JU 390 ? :? "Press  SPACEBAR  to scroll n
```

continued on next page

```
   ot print":? :? FILE$(START,RAND)
QL 400 GOSUB 1000
JC 410 IF A=32 OR A=65 OR A=69 THEN 370
MU 420 GOTO 130
QT 430 REM PRINT COMPLETE LIST
UJ 440 ? "You may wish to use these pro
   gram     lines to adjust your printer
   for the"
FH 450 ? "correct spacing used by labels.
        BE SURE THAT PRINTER IS READY"
ST 460 FOR I=1 TO 250:NEXT I
XZ 470 CLOSE #4:OPEN #4,8,0,"P:":PRINT #4
   ;FILE$:CLOSE #4
NG 480 GOTO 130
SC 490 REM SCREEN COMPLETE
PR 500 FOR I=1 TO 200:NEXT I:? :? FILE$:F
   OR I=1 TO 250:NEXT I
LR 510 IF LEN(FILE$)=0 THEN ? "NO LIST LO
   ADED":FOR I=1 TO 250:NEXT I
MV 520 GOTO 130
YV 530 REM CHANGE MENU
NK 540 ? "":POSITION 10,2:? "     CHANGE
   MENU     "
HK 550 ? :? :? "1 - Add Name/Address":? :
   ? "2 - Delete Name/Address":? :? "3 -
   Save Updated List"
GO 560 ? :? "4 - Main Menu (Without savin
   g list)":?
EB 570 POSITION 3,20:? "SAVE BEFORE RETUR
   NING TO MAIN MENU"
XF 580 POSITION 8,18:? MSG2$:GOSUB 1020
MC 590 POKE 702,0:POKE 752,0:? "":ON A-4
   8 GOTO 620,720,840,130
MS 600 GOTO 130
TR 610 REM ADD NAME
KK 620 ? "":IF LEN(FILE$)=0 THEN FILE$(L
   EN(FILE$)+1)=EOL$:POSITION 2,1:? " NEW
    LIST"
NF 630 ? :? " FILE LOADED IS ";FILENAME$
HT 640 ? :? FILELEN-LEN(FILE$);" FREE CHA
   RACTERS IN MEMORY":POSITION 2,22:? "PR
   ESS RETURN FOR CHANGE MENU"
GG 650 POKE 752,0:POSITION 2,7:? "FIRST L
   INE";:INPUT SUB$
JB 660 IF LEN(SUB$)=0 THEN 540
HN 670 FILE$(LEN(FILE$)+1)=SUB$:FILE$(LEN
   (FILE$)+1)=CHR$(155)
XS 680 ? :? "NEXT LINE";:INPUT SUB$
RU 690 IF LEN(SUB$)=0 THEN FILE$(LEN(FILE
   $)+1)=CHR$(155):? "":GOTO 630
QJ 700 GOTO 670
VS 710 REM DELETE A NAME
QQ 720 POSITION 2,22:? "PRESS RETURN FOR
   CHANGE MENU"
BX 730 POKE 702,0:POSITION 2,6:? "Name to
    Delete";:INPUT SUB$:IF LEN(SUB$)=0 TH
   EN 540
UJ 740 GOSUB 1070
UK 750 GOSUB 1160
UW 760 ? :? "PRESS SPACE BAR TO DELETE":?
    FILE$(START,RAND+1)
ZB 770 GET #1,A:IF A=255 THEN 770
GW 780 IF A<>32 THEN 540
VA 790 GAP=RAND-START+2
PY 800 FILE$(START,LEN(FILE$))=FILE$(RAND
   +2,LEN(FILE$))
PE 810 FILE$=FILE$(1,LEN(FILE$)-GAP)
OX 820 GOTO 540
CJ 830 REM SAVE ROUTINE
OJ 840 POKE 702,64
RR 850 IF LEN(FILENAME$)=0 THEN 890
HE 860 ? :? "DEVICE.FILENAME IS ";FILENAM
   E$:?
YS 865 ? "Press SPACEBAR to add changes t
   o this file. Press ESC to change ";
JL 870 ? "to a new":? "DEVICE.FILENAME":G
   OSUB 1000
LJ 880 IF A=32 THEN 900
NI 890 ? "":POSITION 1,10:? "DEVICE.FILE
   NAME TO SAVE":INPUT FILENAME$
CC 900 IF LEN(FILENAME$)=0 THEN 130
ME 910 TRAP 930:CLOSE #2:OPEN #2,8,0,FILE
   NAME$:LET READ=0:X=32:MAXLEN=LEN(FILE$
   ):SADR=ADR(FILE$):GOSUB 1370
PV 920 CLOSE #2:TRAP 40000:GOTO 130
UT 930 POSITION 5,10:? "I/O ERROR #";PEEK
   (195):CLOSE #2:TRAP 40000
GC 940 REM MAKE NEW LIST
LQ 950 ? "":? :? "          MAKING NEW FILES
    "
FW 960 ? :? "If you have a word processor
   , use it  to make new files.":? "Separ
   ate addresses with two RETURN's."
XZ 970 ? :? "You can also use this progra
   m to make lists.  Follow directions be
   low."
PF 980 POKE 702,64:FILE$="":? :? "NEW DEV
   ICE:FILENAME TO USE";:INPUT FILENAME$:
   POKE 702,0:GOTO 620
LO 990 REM PAUSE SUBROUTINE
UO 1000 POSITION 6,22:? MSG1$
OG 1010 A=PEEK(764):IF A=255 THEN POKE 77
   ,0:GOTO 1010
HC 1020 GET #1,A:IF A=255 THEN 1020
UF 1030 IF A=155 THEN 130
IM 1040 IF A=69 OR A=65 THEN GOSUB 1220
AO 1050 RETURN
XL 1060 REM RAND SUBROUTINE
NU 1070 IF LEN(SUB$)=0 THEN 130
TY 1080 START=RAND+1
BG 1090 RAND=USR(ML,ADR(FILE$),LEN(FILE$)
   ,ADR(SUB$),LEN(SUB$),START)
YV 1100 IF RAND=0 THEN POP :? "":? :? "I
   NVALID NAME OR LIST ENDED":FOR I=1 TO
   200:NEXT I:GOTO 130
MS 1110 START=RAND
PX 1120 RAND=USR(ML,ADR(FILE$),LEN(FILE$)
   ,ADR(EOL$),LEN(EOL$),START)
JE 1130 IF RAND=0 THEN 1100
AN 1140 RETURN
KW 1150 REM SEARCH SUBROUTINE
EH 1160 START=START-30:IF START<0 THEN ST
   ART=1
RT 1170 X=0:X=USR(ML,ADR(FILE$),LEN(FILE$
   ),ADR(EOL$),LEN(EOL$),START)
JE 1180 IF X=RAND THEN 1160
GR 1190 START=X
AD 1200 RETURN
GW 1210 REM PRINTER
TP 1220 TRAP 1230:CLOSE #4:OPEN #4,8,0,"P
   :":GOTO 1240
AR 1230 ? "I/O ERROR #";PEEK(195):TRAP
   40000:CLOSE #4:GOTO 130
WR 1240 IF A=69 THEN ? #4;"1";CHR$(40);F
   ILE$(START,RAND+1):CLOSE #4:RETURN
MO 1250 IF A=65 THEN PRINT #4;"1";CHR$(1
   0);FILE$(START,RAND+1):CLOSE #4:RETURN
OY 1260 GOTO 130
WN 1270 REM LOAD MENU
QY 1280 TRAP 1290:? "":CLOSE #2:OPEN #2,
   6,0,"D:*.*":FOR X=1 TO 10000:GET #2,A:
   ? CHR$(A);:NEXT X
VV 1290 CLOSE #2:? MSG1$:TRAP 40000
VU 1300 REM LOAD ROUTINE
KT 1310 POKE 752,0:? :? "DEVICE.FILENAME
   TO LOAD":INPUT FILENAME$
YW 1320 IF LEN(FILENAME$)=0 THEN 130
JF 1330 TRAP 1360:CLOSE #2:OPEN #2,4,0,FI
   LENAME$:LET READ=1:X=32:MAXLEN=FILELEN
   :SADR=ADR(FILE$):GOSUB 1370
SE 1340 CLOSE #2:FILE$(TRUELEN)=CHR$(155)
   :TRAP 40000:RETURN
IZ 1350 ? "":POSITION 5,10:? "I/O ERROR
   #";PEEK(195):CLOSE #2:TRAP 40000
PA 1360 GOTO 130
TS 1370 REM IO LOAD/SAVE
IE 1380 ICCOM=834:ICBADR=836:ICBLEN=840:I
   CSTAT=835
WT 1390 H=INT(SADR/256):L=SADR-H*256:POKE
    ICBADR+X,L:POKE ICBADR+X+1,H
BE 1400 H=INT(MAXLEN/256):L=MAXLEN-H*256:
   POKE ICBLEN+X,L:POKE ICBLEN+X+1,H
OF 1410 POKE ICCOM+X,11-4*READ:A=USR(ADR(
   IO$),X)
WJ 1420 TRUELEN=PEEK(ICBLEN+X)+256*PEEK(I
   CBLEN+X+1)
AQ 1430 RETURN
```

LISTING 2

```
PQ 10 REM MIGHTY MAILER, LISTING 2
MW 20 REM BY PHILIP BATE, Ph.D.
FW 30 REM (c) 1985, ANTIC PUBLISHING
TQ 35 REM (CREATES LINES 80-83)
CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
WO 70 FN$="D:LINES.LST":REM THIS IS THE N
   AME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "      ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
```

```
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 752,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdown...T-";INT(LM/10);")   "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "TOO MANY DATA LINES!":? "CANNOT CREATE FILE!":END
CZ 180 IF C<LN+1 THEN ? :? "TOO FEW DATA LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? " COMPLETED "

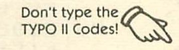
JF 1000 DATA 319
TR 1010 DATA 056048032082065078068036040049044056054041061034169000133212133213104201005240018141000004162
NO 1020 DATA 000236000000420800109610410423216900024024310414100500410414100400410414100300410402410900400 4
JJ 1030 DATA 141002004173003004109005004141003004104133204104133203104104141001004104133206104024109004004
UQ 1040 DATA 133205165206109005004133206034155056050032082065078068036040056055044049055050041061034165205
HA 1050 DATA 056233001133205165206233000133206162000160000177205209203240037173002004056229205141000004173
QC 1060 DATA 003004229206013000004208001096165205024105001133205165206105000133206169000240209232236001004
CN 1070 DATA 208004169000240054200177205209203240037173002004056229205141000004034155056051032082065078068
TN 1080 DATA 036040049055051044050054048041061034173003004229206013000004208001096165205024105001133205165
BK 1090 DATA 206105000133206169000240042232236001004240004169000240202173002004056229205141000004173003004
TP 1100 DATA 229206013000004144030240028165205056237004004133212165206237005004133213165212024105001133212
FH 1110 DATA 165213105000133213096034155
```

how much do your $$$ *really* earn?

ANNUAL % RATE

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LISTING 1




```
DX 10 REM APR - ANNUAL PERCENTAGE RATE
KY 20 REM BY BOB MUELLER
ZB 30 REM (c)1987, ANTIC PUBLISHING INC.
VE 35 REM ->DO NOT RENUMBER THIS PROGRAM!

DF 40 GRAPHICS 0:POKE 709,12:POKE 710,244:POKE 712,244:POKE 752,1:POKE 82,3:POSITION 3,7
VQ 50 ? "┌────────────────────────────────────┐"
OM 60 ? "│                                    │"
TS 70 ? "│  APR - ANNUAL PERCENTAGE RATE      │"
OO 80 ? "│                                    │"
RA 90 ? "└────────────────────────────────────┘":? :?
PC 100 ? "EFFECTIVE ANNUAL RETURN ON SAVINGS"
DX 1000 REM APR REV 1.0
GZ 1010 POKE 16,112:POKE 53774,112:GOTO 3140
NJ 1020 REM CHNUM
IW 1030 B$=BL$:B$(N4,N80)=A$(N4):B$(N1,N3)=STR$(NUM):IF  NOT XE THEN RETURN
YW 1040 POINT #N4,M(NUM,N0),M(NUM,N1):PRINT #N4;B$:RETURN
XD 1050 REM CHCOLOR
HO 1060 D=D+N2:SETCOLOR N2,D,N4:SETCOLOR N4,D,N4:POKE 16,112:POKE 53774,112:RETURN
UL 1070 REM MR - MENU RETURN
OV 1080 PRINT "                  PRESS KEY FOR MENU ":GET #N1,K:RETURN
PC 1090 REM TITLE
QC 1100 POKE CRSINH,N1:PRINT "NO   T   MO/DA/YR   -$0000.00   +$0000.00  ":RETURN
NO 1110 REM FIX
RF 1120 NUM=FIND:IF XE THEN GOTO CHNUM
OS 1130 GOSUB CHNUM:S$(FIND*N80-79,LEN(S$))=B$:RETURN
AQ 1140 REM ADD
AU 1150 NUM=LAST:IF XE THEN GOTO CHNUM
AT 1160 GOSUB CHNUM:S$(LEN(S$)+N1)=B$:RETURN
ZM 1170 REM RETRIEVE
BH 1180 IF XE THEN POINT #N4,M(FIND,N0),M(FIND,N1):INPUT #N4;A$:RETURN
KQ 1190 A$=S$(FIND*N80-79):RETURN
HP 1200 REM DECIMAL
NJ 1210 E=INT(ABS(AMT)*C+0.5)/C:LL=LEN(STR$(INT(E)))-N1:IF AMT<N0 THEN LL=LL+N1:E=N0-E
KX 1220 AMT=E:RETURN
AT 1230 REM MENU
AG 1240 POKE 82,N5:PRINT "":GOSUB CHCOLOR:POKE CRSINH,N1:INS=N0:CLOSE #N1:OPEN #N1,N4,N0,"K:"
EC 1250 PRINT "      ┌──────────────────────┐"
BV 1260 PRINT "      │   MAIN APR MENU      │"
YJ 1270 PRINT "      └──────────────────────┘"

XN 1280 PRINT "(1) ADD AN ENTRY (";F-LAST;" MORE)"
IF 1290 PRINT "(2) INSERT NEW ENTRY WITHIN"
PD 1300 PRINT "(3) DISPLAY ENTRIES (";LAST;" NOW)"
BZ 1310 PRINT "(4) CORRECTIONS TO AN ENTRY"
GV 1320 PRINT "(5) DELETE/MOVE/SWAP ENTRIES"
RA 1330 PRINT "(6) CALCULATE & DISPLAY YIELDS"
XG 1340 PRINT "(7) CALCULATE & PRINT ENTRIES"
FE 1350 PRINT "(8) UPDATE THE DISK AND QUIT"
MK 1360 PRINT "          PRESS ( ) KEY ":POKE 82,N0:GET #N1,K
TV 1370 K=K-N48:IF K<N1 OR K>N8 THEN GOTO MENU
SQ 1380 ON K GOSUB UPDATE,INSERT,DISPLAY,CORRECT,DELETE,ANALYZE,ANALYZE+N10,EXIT
CJ 1390 TRAP UNTRAP:GOTO MENU
LT 1400 REM INSERT
MU 1410 PRINT "":IF LAST<N1 THEN RETURN
UB 1420 PRINT " NOW ";LAST;" ENTRIES; ROOM FOR ";F-LAST;" MORE":IF F-LAST<N1 THEN GOTO MR
SD 1430 ? " INPUT NUMBER TO INSERT AFTER";:POKE CRSINH,N0:TRAP INSERT:INPUT K:I
```

continued on next page

```
   F K=LAST THEN GOTO UPDATE
JQ 1440 IF K<N0 OR K>LAST THEN GOTO INSER
   T
VL 1450 POKE CRSINH,N1:PRINT "■ STAND BY
   AS ENTRIES ARE MOVED ..."
TL 1460 FIND=LAST:GOSUB RETRIEVE:LAST=LAS
   T+N1:GOSUB ADD
GH 1470 IF LAST-K>N2 THEN FOR X=LAST-N2 T
   O K+N1 STEP -N1:FIND=X:GOSUB RETRIEVE:
   FIND=X+N1:GOSUB FIX:NEXT X
IR 1480 FIND=K+N1:INS=N1
BT 1490 REM UPDATE
IY 1500 PRINT "■":A$=BL$:IF F-LAST<N1 THE
   N PRINT ," NO ROOM FOR MORE":GOTO MR
BG 1510 GOSUB CHCOLOR:IF  NOT INS THEN LA
   ST=LAST+N1:FIND=LAST
AY 1520 IF FIND=N1 THEN ? " (3) INPUT THE
    INITIAL DEPOSIT OR":? "     BALANCE O
   N AN INTEREST DATE":K=N3:GOTO 1600
UG 1530 POKE CRSINH,N1:PRINT "■ THIS IS E
   NTRY ";LAST;"; ROOM FOR ";F-LAST;" MOR
   E■"
ZU 1540 PRINT "    (1) GAIN CREDIT (FUND C
   HANGE)■"
OF 1550 PRINT "    (2) GAIN CHECK (NO FUND
    CHANGE)■"
NK 1560 PRINT "    (3) DEPOSIT (FUND INCRE
   ASE)■"
SF 1570 PRINT "    (4) WITHDRAWAL (FUND DE
   CREASE)■"
PK 1580 PRINT "    (5) CALCULATION (NO FUN
   D CHANGE)■":PRINT ,"PRESS < > TYPE KE
   Y■"
KN 1590 GET #N1,K:K=K-N48:IF K<N1 OR K>N5
    THEN 1530
KH 1600 POKE CRSINH,N0
CW 1610 TYPE=K:A$(N6,N6)=STR$(TYPE):A$(N1
   1,N80)="/0 /0":IF TYPE=N5 THEN 1650
WX 1620 PRINT "■ INPUT THE AMOUNT FOR (";
   TYPE;")";:TRAP 1620:INPUT AMT:IF AMT<N
   0 AND TYPE<>N1 THEN 1620
YV 1630 IF TYPE=N4 THEN A$(25,N27)=".00":
   GOSUB DECIMAL:LL=24-LL:A$(LL,N27)=STR$
   (AMT):GOTO 1650
YH 1640 A$(36,N80)=".00":GOSUB DECIMAL:LL
   =35-LL:A$(LL,N80)=STR$(AMT)
IB 1650 PRINT :PRINT " INPUT  MONTH  (1 =
   JAN)";:TRAP 1650:INPUT K
NK 1660 IF K<N1 OR K>N12 THEN 1650
FU 1670 IF K<N10 THEN A$(N10,N10)=STR$(K)
UG 1680 IF K>N9 THEN A$(N9,N10)=STR$(K)
IA 1690 PRINT :PRINT " ENTER  DAY  (1 T
   O 31)";:TRAP 1690:INPUT K
NE 1700 IF K<N1 OR K>31 THEN 1690
LK 1710 IF K<N10 THEN A$(N13,N13)=STR$(K)

NG 1720 IF K>N9 THEN A$(N12,N13)=STR$(K)
SZ 1730 PRINT :PRINT " ENTER  YEAR  (87=
   1987)";:TRAP 1730:INPUT K
SC 1740 IF K<N0 OR K>99 THEN 1730
SC 1750 IF K<N10 THEN A$(N16,N16)=STR$(K)

TS 1760 IF K>N9 THEN A$(N15,N16)=STR$(K)
DC 1770 IF TYPE<N3 THEN C$="INTEREST CRED
   IT":GOTO 1800
TL 1780 IF TYPE=N5 THEN A$(41,N80)="ACCRU
   ED INTEREST (TO BE COMPUTED) 0.00":GOT
   O 1810
LK 1790 PRINT :PRINT " INPUT THE DESCRIPT
   ION UP TO ARROW  ■■":INPUT C$:PRINT
FM 1800 A$(41,N80)=C$:IF TYPE=N2 THEN A$(
   50,N80)="CHECK "
JX 1810 IF INS THEN GOTO FIX
NO 1820 GOTO ADD
CL 1830 REM DISPLAY
YW 1840 PRINT "■":L=N0:IF LAST=N0 THEN PR
   INT ,"THERE ARE NO ENTRIES":GOTO MR
UU 1850 X=N1:C$="  PRESS KEY FOR MORE (E
   SC FOR MENU) ":IF LAST<N7 THEN 1880
DQ 1860 PRINT LAST;" TO DISPLAY■":PRINT "
   INPUT STARTING NUMBER";:POKE CRSINH,N0
   :TRAP 1880:INPUT X
FV 1870 IF X<N1 OR X>LAST THEN X=N1
FZ 1880 FOR FIND=X TO LAST:GOSUB RETRIEVE
   :L=L+N1:IF L=N1 THEN GOSUB TITLE
DX 1890 PRINT A$:IF L=N6 AND FIND<LAST TH
   EN L=N0:PRINT C$:GET #N1,K:IF K=N27 TH
   EN POP :RETURN
EX 1900 NEXT FIND:PRINT :PRINT "■        PRES
   S KEY FOR MENU":GET #N1,K:RETURN
ZH 1910 REM CORRECT
WO 1920 POKE CRSINH,N0:PRINT "■"
UN 1930 TRAP MENU:PRINT LAST;" ENTRIES":P
   RINT :PRINT "INPUT ENTRY NUMBER TO COR
   RECT";:INPUT K:TRAP UNTRAP
NZ 1940 IF K<N1 OR K>LAST THEN PRINT "■■N
   OT ACTIVE":GOTO MR
GA 1950 FIND=K:GOSUB RETRIEVE:GOSUB TITLE
   :PRINT A$:POKE CRSINH,N0
DT 1960 PRINT :PRINT "EDIT ENTRY AND PRES
   S RETURN";:INPUT A$:IF A$="" THEN RETU
   RN
CQ 1970 GOTO FIX
AU 1980 REM DAYS
BS 1990 RETURN
YL 2000 DAY=DAY+31:RETURN
EG 2010 DAY=DAY+59:RETURN
BI 2020 DAY=DAY+90:RETURN
WN 2030 DAY=DAY+120:RETURN
YZ 2040 DAY=DAY+151:RETURN
AV 2050 DAY=DAY+181:RETURN
YB 2060 DAY=DAY+212:RETURN
AN 2070 DAY=DAY+243:RETURN
CJ 2080 DAY=DAY+273:RETURN
ZP 2090 DAY=DAY+304:RETURN
AJ 2100 DAY=DAY+334:RETURN
BM 2110 REM ANALYZE
HZ 2120 LPT=N0:IF LAST>N1 THEN PRINT "■■■
   ■■■■■■      CRUNCHING ENTRY NUMBER:":G
   OTO 2200
CU 2130 LPT=N1:IF LAST<N2 THEN PRINT "■",
   "  TOO FEW ENTRIES":GOTO MR
UZ 2140 PRINT "■":GOSUB CHCOLOR:B$="EFFEC
   TIVE ANNUAL YIELD FOR ":PRINT "INPUT T
   HE FUND NAME TO ARROW      ■■"
BI 2150 POKE CRSINH,N0:INPUT C$:B$(LEN(B$
   )+N1)=C$:X=N1:IF LAST<N20 THEN 2180
OI 2160 PRINT "■■THERE ARE ";LAST;" ENTRI
   ES;":PRINT "INPUT THE STARTING NUMBER
   FOR PRINTING":TRAP 2180:INPUT X
FI 2170 IF X<N1 OR X>LAST THEN X=N1
TP 2180 POKE CRSINH,N1:PRINT "■■■■■■■ALIGN
    PAPER & PRESS A KEY (ESC FOR MENU)";:
   GET #N1,K:IF K=N27 THEN RETURN
QO 2190 PRINT "■■■■■■■       GETTING THE NU
   MBERS ON PAPER":TRAP 2180:CLOSE #N2:OP
   EN #N2,N8,N0,"P:"
NJ 2200 TRAP 2360:FIND=LAST:GOSUB RETRIEV
   E:C$=A$(N9,N16):IF LPT THEN GOSUB HEAD
   ING
CE 2210 BAL=N0:IN=N0:DXA=N0:DXASTD=N0:L=N
   0:P=N0:IL=N0:YLD=N5
GS 2220 FOR FIND=N1 TO LAST:IF  NOT LPT T
   HEN POSITION 30,N8:PRINT FIND
BG 2230 GOSUB RETRIEVE:TYPE=VAL(A$(N6)):I
   F TYPE=N5 THEN AMT=N0
RS 2240 IF TYPE<>N5 THEN AMT=VAL(A$(19,38
   )):IF A$(25,25)="." THEN AMT=N0-AMT
BE 2250 DAY=VAL(A$(N12,N13)):GOSUB DAYS+(
   VAL(A$(N9,N10))-N1)*N10
XQ 2260 YR=VAL(A$(N15,N16)):IF YR<YR0 THE
   N YR=YR+C
LT 2270 IF FIND=N1 THEN YR0=YR:BAL=AMT:AV
   BAL=AMT:DAY0=DAY:DAYL=DAY:DAYI=DAY:GOT
   O 2390
PM 2280 DAY=DAY+(YR-YR0)*Y:IF DAY<DAYL TH
   EN PRINT "■     CHECK DATE SEQUENCE THR
   U ENTRY ";FIND:GOTO MR
TJ 2290 IF TYPE>N2 THEN 2370
ZT 2300 IN=IN+AMT:DXA=DXA+BAL*(DAY-DAYL):
   AVBAL=DXA/(DAY-DAYI):IF TYPE=N1 THEN B
   AL=BAL+AMT
UX 2310 YLD=Y*C*AMT/AVBAL/(DAY-DAYI):DXAS
   TD=DXASTD+AVBAL*(DAY-DAYI)
CM 2320 AVBALSTD=DXASTD/(DAY-DAY0):YLDSTD
   =Y*C*IN/AVBALSTD/(DAY-DAY0)
DJ 2330 DAYL=DAY:DAYI=DAY:DXA=N0
VD 2340 IF LPT AND FIND>=X THEN IL=N1:GOS
   UB FILL:IL=N0
PR 2350 GOTO 2400
ZQ 2360 POP :PRINT "■        TROUBLE ANALY
   ZING ENTRY ";FIND:GOTO MR
UD 2370 DXA=DXA+BAL*(DAY-DAYL):DAYL=DAY:B
   AL=BAL+AMT
AA 2380 IF TYPE=N5 THEN A$(58,74)=BL$:AMT
   =DXA*YLD/Y/C:GOSUB DECIMAL:LL=75-LL:A$
   (LL,N80)=STR$(AMT):GOSUB FIX
KO 2390 IF LPT AND FIND>=X THEN GOSUB FIL
   L
ZU 2400 NEXT FIND:TRAP UNTRAP:CLOSE #N2
QI 2410 REM RESULT
VD 2420 PRINT "■":GOSUB CHCOLOR
BC 2430 PRINT "            ■■■■■■■■■■■■■■■■
   ■■■"
OP 2440 PRINT "            ■ AS OF ";C$;"
   ■"
GM 2450 PRINT "            ■■■■■■■■■■■■■■■■
   ■■■"
```

```
IY 2460 POSITION N8,N6:PRINT "CURRENT BAL
   ANCE = $";BAL
YQ 2470 POSITION N10,N8:PRINT "CURRENT YI
   ELD = ";INT(C*YLD+0.5)/C;"%"
JE 2480 POSITION N11,N10:PRINT "ACCRUED G
   AIN = $";INT(DXA*YLD/Y+0.5)/C
NF 2490 POSITION N10,N13:PRINT "GAINS TO
   DATE = $";IN
BR 2500 POSITION N8,N15:PRINT "OVERALL AV
   G BAL = $";INT(C*AVBALSTD+0.5)/C
RY 2510 POSITION N10,17:PRINT "YIELD TO D
   ATE = ";INT(C*YLDSTD+0.5)/C;"%⊞":GOTO
   MR
UM 2520 REM FILL
MM 2530 L=L+N1:P=P+N1:IF L=N4 THEN PRINT
   #N2;CHR$(N27);CHR$(N28);:L=N1:IF P>N40
    THEN GOSUB HEADING
KI 2540 R$=BL$:R$(N1)=A$(N9,N16):R$(N11)=
   A$(N1,N3):R$(N16)=A$(41,N80):R$(55)=A$
   (18,38)
EM 2550 IF TYPE=N5 THEN R$(33,55)=A$(58):
   GOTO 2620
WR 2560 AMT=BAL:R$(85)=".00":GOSUB DECIMA
   L:LL=84-LL:R$(LL,N123)=STR$(AMT)
YZ 2570 IF  NOT IL THEN 2620
RF 2580 AMT=AVBALSTD:R$(97)=".00":GOSUB D
   ECIMAL:LL=96-LL:R$(LL)=STR$(AMT)
IC 2590 AMT=IN:R$(107)=".00":GOSUB DECIMA
   L:LL=106-LL:R$(LL)=STR$(AMT)
KT 2600 AMT=YLD:R$(114)=".00":GOSUB DECIM
   AL:LL=113-LL:R$(LL)=STR$(AMT)
WN 2610 AMT=YLDSTD:R$(121)=".00":GOSUB DE
   CIMAL:LL=120-LL:R$(LL,N123)=STR$(AMT)
KV 2620 PRINT #N2;"      ";R$:RETURN
IR 2630 REM HEADING
YP 2640 R$=BL$:R$(34-LEN(B$)/N2,N80)=B$:E
   =N2:IF P>N40 THEN E=N9:P=N1
XJ 2650 FOR K=N1 TO E:PRINT #N2;" ":NEXT
   K:POKE 77,N0
SG 2660 PRINT #N2;CHR$(N27);CHR$(N20);CHR
   $(N27);CHR$(N14);R$(N1,65):R$=BL$:R$(6
   4)="AS OF"
IL 2670 PRINT #N2;CHR$(N27);CHR$(N28);R$
EQ 2680 R$=BL$:R$(29)=C$
GN 2690 PRINT #N2;CHR$(N27);CHR$(N28);CHR
   $(N27);CHR$(N20);CHR$(N27);CHR$(N14);R
   $;CHR$(N10);CHR$(N10)
OA 2700 R$=BL$:R$=" DATE       NO    DESCRIP
   TION                   ACCRUED       D
   EBIT       CREDIT"
JI 2710 R$(N80,N123)=" BALANCE      AVG BA
   L     INT $    TERM%    YLD%":PRINT #N2;"
       ";R$;CHR$(N10):RETURN
VS 2720 REM DELETE
CH 2730 POKE CRSINH,N1:GOSUB CHCOLOR:PRIN
   T "⊠⊞⊞⊞⊞⊞"
KY 2740 PRINT ,"(1) DELETE ONE ENTRY⊞"
LV 2750 PRINT ,"(2) DELETE A GROUP⊞"
BZ 2760 PRINT ,"(3) DELETE ■ALL■ ";LAST
LA 2770 PRINT ,"⊞(4) MOVE ONE ENTRY⊞"
TW 2780 PRINT ,"(5) SWAP TWO ENTRIES⊞"
RX 2790 PRINT ,"(6) RETURN MAIN MENU⊞"
BD 2800 PRINT ,"      ■PRESS■(■)■KEY■":GET
   #N1,K:IF LAST=N0 THEN RETURN
XU 2810 K=K-N48:IF K<N1 OR K>N6 THEN 2730

ZV 2820 POKE CRSINH,N0:PRINT "⊠THERE ARE
   ";LAST;" ENTRIES⊞":TRAP DELETE
BL 2830 ON K GOTO 2840,2860,2950,2980,306
   0,3120
MQ 2840 PRINT "INPUT THE ENTRY NUM TO DEL
   ETE";:INPUT K:IF K<N1 OR K>LAST THEN G
   OTO DELETE
MW 2850 GROUP=N0:GOTO 2890
WO 2860 GROUP=N1:PRINT "DELETE A GROUP OF
    ENTRIES":IF LAST<N3 THEN GOTO DELETE
MV 2870 PRINT "INPUT LO,HI NUMS (4,8)";:I
   NPUT LO,HI:IF LO>=HI OR HI>LAST OR LO<
   N1 THEN GOTO DELETE
PC 2880 FOR K=HI TO LO STEP -N1
BR 2890 PRINT "ENTRY ";K;" WAS DELETED":I
   F K=LAST THEN 2910
QO 2900 FOR X=K+N1 TO LAST:FIND=X:GOSUB R
   ETRIEVE:FIND=X-N1:GOSUB FIX:NEXT X
LP 2910 LAST=LAST-N1:IF  NOT LAST AND  NO
   T XE THEN S$="":GOTO 2930
FZ 2920 IF  NOT XE THEN S$=S$(N1,N80*LAST
   )
FO 2930 IF  NOT GROUP OR  NOT LAST THEN R
   ETURN
HY 2940 NEXT K:RETURN
TU 2950 PRINT "DELETE ALL!  ARE YOU SURE?
   (Y/N)";:GET #N1,K:IF CHR$(K)<>"Y" THE
   N RETURN
EK 2960 LAST=N0:IF  NOT XE THEN S$=""
BN 2970 RETURN
RB 2980 IF LAST<N3 THEN GOTO DELETE
PM 2990 PRINT "INPUT ENTRY NUMBER TO MOVE
   ";:INPUT MOVE:PRINT :IF MOVE<N1 OR MOV
   E>LAST THEN GOTO DELETE
NP 3000 PRINT "INPUT ENTRY NUMBER TO MOVE
   AFTER";:INPUT AFTER
PB 3010 IF MOVE=AFTER OR AFTER>LAST THEN
   GOTO DELETE
BH 3020 FIND=MOVE:GOSUB RETRIEVE:C$=A$:IF
   MOVE>AFTER THEN 3040
HO 3030 FOR X=MOVE+N1 TO AFTER:FIND=X:GOS
   UB RETRIEVE:FIND=X-N1:GOSUB FIX:NEXT X
   :FIND=AFTER:GOTO 3050
IQ 3040 FOR X=MOVE-N1 TO AFTER+N1 STEP -N
   1:FIND=X:GOSUB RETRIEVE:FIND=X+N1:GOSU
   B FIX:NEXT X:FIND=AFTER+N1
MY 3050 A$=C$:GOSUB FIX:RETURN
QE 3060 IF LAST<N3 THEN GOTO DELETE
GH 3070 PRINT "INPUT NUMBERS TO BE SWAPPE
   D"
HV 3080 PRINT "EXAMPLE: 18,34";:INPUT LO,
   HI:IF LO<N1 OR HI<N2 OR LO=HI THEN GOT
   O DELETE
QA 3090 IF HI>LAST THEN PRINT "NUMBER TOO
    HIGH":GOTO 3070
KY 3100 FIND=LO:GOSUB RETRIEVE:C$=A$:FIND
   =HI:GOSUB RETRIEVE:FIND=LO:GOSUB FIX
NR 3110 A$=C$:FIND=HI:GOSUB FIX
AJ 3120 RETURN
YG 3130 REM INITIALIZE
SG 3140 DATA 1,2,3,4,5,6,7,8,9,10,11,12,1
   3,14,15,16,20,27,28,40,48,80,100,123,3
   65,752,40000
AQ 3150 READ N1:READ N2:READ N3:READ N4:R
   EAD N5:READ N6:READ N7:READ N8:READ N9
   :READ N10
WU 3160 READ N11:READ N12:READ N13:READ N
   14:READ N15:READ N16:READ N20:READ N27
   :READ N28
IY 3170 READ N40:READ N48:READ N80:READ C
   :READ N123:READ Y:READ CRSINH:READ UNT
   RAP
EG 3180 DATA 1150,2120,1060,1030,1920,199
   0,1210,2730,1840,3320,2530,1120,2640,1
   410,1240,1080,1180,1100,1500
HI 3190 READ ADD:READ ANALYZE:READ CHCOLO
   R:READ CHNUM:READ CORRECT:READ DAYS
KY 3200 READ DECIMAL:READ DELETE:READ DIS
   PLAY:READ EXIT:READ FILL:READ FIX
HC 3210 READ HEADING:READ INSERT:READ MEN
   U:READ MR:READ RETRIEVE:READ TITLE:REA
   D UPDATE
JI 3220 DIM A$(N80),B$(N80),BL$(N123),C$(
   N80),D$(N10),R$(N123),SS$(N80)
LQ 3230 D$="D1:APR.DAT":BL$(N1)=" ":BL$(N
   123)=BL$:BL$(N2)=BL$
JW 3240 TRAP 3250:OPEN #N3,N4,N0,D$:TRAP
   UNTRAP:GOTO 3260
OU 3250 CLOSE #N3:OPEN #N3,N8,N0,D$:PRINT
    #N3;LAST:CLOSE #N3:OPEN #N3,N4,N0,D$
UC 3260 INPUT #N3;LAST
LJ 3270 TRAP 3280:OPEN #N4,N8,N0,"D8:APR.
   DAT":GOTO 3390
BH 3280 F=INT((FRE(N0)-Y)/N80):DIM S$(F*N
   80):IF LAST=N0 THEN 3300
OX 3290 FOR X=N1 TO LAST:INPUT #N3;SS$:S$
   (LEN(S$)+N1)=SS$:NEXT X
TZ 3300 CLOSE #N3:GOTO MENU
CV 3310 REM EXIT
AY 3320 PRINT "⊠":IF LAST=N0 THEN 3350
QH 3330 PRINT ,"⊞SAVING DATA TO DISK":IF
   XE THEN 3450
ZK 3340 OPEN #N3,N8,N0,D$:PRINT #N3;LAST:
   FOR X=N1 TO LEN(S$) STEP N80:SS$=S$(X)
   :PRINT #N3;SS$:NEXT X:CLOSE #N3
BB 3350 POSITION 2,10:? "Do you really wa
   nt to QUIT (Y/N)?";:GET #1,K:IF  NOT (
   K=89 OR K=78) THEN 3350
FM 3351 IF K=78 THEN RETURN
IG 3355 POKE 82,2:GRAPHICS N0:END
QE 3360 POKE N16,64:POKE 53774,64:SETCOLO
   R N1,N0,N12:IF XE THEN OPEN #N4,N12,N0
   ,"D8:APR.DAT"
SD 3370 GOTO MENU
HX 3380 REM 130XE
XO 3390 XE=N1:F=770:B$=BL$:DIM M(F,N1):PO
   SITION N11,N20:PRINT "RAMDISK ENTRY:":
   IF LAST=N0 THEN 3410
LL 3400 FOR X=N1 TO LAST:INPUT #N3;A$:NOT
   E #N4,A,B:PRINT #N4;A$:M(X,N0)=A:M(X,N
   1)=B:POSITION 26,N20:? X:NEXT X
```

continued on next page

```
KD 3410 TRAP 3430:FOR X=LAST+N1 TO F:NOTE
   #N4,A,B:PRINT #N4;B$:M(X,N0)=A:M(X,N1
   )=B:POSITION 26,N20:? X:NEXT X
IS 3420 TRAP UNTRAP:CLOSE #N3:CLOSE #N4:O
   PEN #N4,N12,N0,"D8:APR.DAT":GOTO MENU
HU 3430 POP :F=X-N1:GOTO 3420
DX 3440 REM 130XE EXIT
KT 3450 POINT #N4,M(N1,N0),M(N1,N1):OPEN
   #N3,N8,N0,D$:PRINT #N3;LAST
WS 3460 FOR X=N1 TO LAST:INPUT #N4;A$:PRI
   NT #N3;A$:NEXT X:CLOSE #N4:GOTO 3350
```

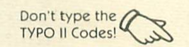
LISTING 2

```
DX 10 REM APR - ANNUAL PERCENTAGE RATE
KY 20 REM BY BOB MUELLER
FW 30 REM (c) 1985, ANTIC PUBLISHING
ZZ 35 REM (THIS PROGRAM CREATES A FILE
   CALLED AUTOAPR.SYS.
          ONCE CREATED,
EM 36 REM COPY IT TO YOUR APR DISK, AND
          RENAME IT TO AUTORUN.SYS)
CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
CH 70 FN$="D:AUTOAPR.SYS":REM THIS IS THE
    NAME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "      ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")        "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CZ 180 IF C<LN+1 THEN ? :? "TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? "■COMPLETED■
   "
GF 1000 DATA 151
MI 1010 DATA 2552550000061360061620001890
   26003201069240005232232232208244232142
   105006189026003133205169107
NT 1020 DATA 1570260032321890260031332061
   69006157026003160000162016177205153107
   006200202208247169067141111
KW 1030 DATA 0061690061411120061690131411
   06006096172106006240009185123006206106
   006160001096138072174105006
TN 1040 DATA 1652051570260032321652061570
   26003104170169155160001096000000000000
   000000000000000000000000000
FM 1050 DATA 0000760000000000340830650660
   46082080065058068034078085082255255226
   002227002000006
```

artifacting Article on page 20

ATARI ANIMATION: LESSON 4

LISTING 1


Don't type the TYPO II Codes!

```
JA 1 REM HAUNTED HOUSE, PART 4
OQ 2 REM BY ROBIN ALAN SHERER
PN 3 REM (c) 1987, ANTIC PUBLISHING INC.
NK 5 REM
VW 10 DELAY=100
RM 20 DIM MM$(41):MM$="hh0hNhQhPh■■▶◣
   PhGINPeDPWf0fQJ◆DPi◆"
ME 30 CB=PEEK(740)-4:POKE 106,CB-12:CA=CB
   *256:GRAPHICS 0
NA 40 GOSUB 3000
IU 99 GOTO 1000
BH 100 FOR I=1 TO 50:NEXT I:RETURN
HW 1000 REM
PD 1160 POKE 752,1
JF 1170 SETCOLOR 2,0,0:SETCOLOR 1,0,10
WG 1180 FOR R=15 TO 22
LW 1190 POSITION 2,R:? "%";
IO 1200 NEXT R
IN 1210 POSITION 2,14:? "◢GMNGQ3"
ID 1220 POSITION 3,13:? "!' # *"
HP 1230 POSITION 1,15:? "◢"
LD 1240 FOR R=6 TO 13
RU 1250 POSITION 8,R:? "J"
JG 1260 NEXT R
VL 1270 POSITION 1,9:? "━━━━━━━"
LJ 1280 POSITION 1,10:? "SPOOKY"
WG 1290 POSITION 1,11:? CHR$(27);CHR$(30+
   128);CHR$(27);CHR$(28+128);"STLE"
PL 1300 POSITION 13,0:? "◢◣"
CN 1310 FOR R=1 TO 6
ME 1320 POSITION 13-R,R:? "◢"
NN 1330 POSITION 14+R,R:? "◣"
JC 1340 NEXT R
JY 1350 FOR R=6 TO 11
NF 1360 POSITION 19,R:? "J"
JL 1370 NEXT R
ND 1380 POSITION 20,11
HG 1390 ? "$$$$$$$$$$$$$$$"
LO 1400 POSITION 20,10
IH 1410 ? "W X Z 0 1 2 e F f"
UH 1420 FOR R=12 TO 22
IK 1430 POSITION 33,R:? "%";
JE 1440 NEXT R
ED 1450 POSITION 35,19:? " ⊞ "
LU 1460 POSITION 35,20:? "◢■◣"
BO 1470 POSITION 34,21:? "& x ("
DI 1480 POSITION 35,22:? "■■■";
AG 1490 POSITION 13,5:? "/□□□\"
RF 1500 POSITION 13,6:? "□   □"
WT 1510 POSITION 13,7:? "\□□□/"
EM 1520 POSITION 0,23
ML 1530 FOR I=1 TO 39:? "■";:NEXT I
MV 1540 RESTORE 1720
IC 1550 FOR STAR=1 TO 10
MX 1560 READ C,R:POSITION C,R:? "v"
VL 1570 NEXT STAR
BG 1580 POSITION 33,5:? "s"
UO 1710 REM _STARS
FM 1720 DATA 2,1,3,3,19,0,23,0,29,0
JK 1730 DATA 18,2,24,5,26,1,31,2,38,2
HX 2000 REM
XB 2010 X=5:Y=20
AV 2060 POKE 756,CB+2
EK 2070 POSITION X,Y:? #6;"45":POSITION X
   ,Y+1:? #6;"67":POSITION X,Y+2:? #6;"89
   ":GOSUB DELAY
HH 2080 POSITION X,Y:? #6;":;":POSITION X
   ,Y+1:? #6;"<=":POSITION X,Y+2:? #6;">?
   ":SCROLL=SCROLL+2:GOSUB DELAY
PO 2090 POSITION X,Y:? #6;"45":POSITION X
   ,Y+1:? #6;"@A":POSITION X,Y+2:? #6;"BC
   ":SCROLL=SCROLL+4:GOSUB DELAY
QP 2100 GOTO 2070
HY 3000 REM
```

```
DV 3010 DIM CR$(1024):REM TEST.FNT
LF 3020 CR$(1)="♥♥♥♥♥♥♥♥♥♥■<<■■■■♥♥♥♥♥♥♥♥♥"
RT 3030 CR$(24)="■■■■■■6■■■■■■■p1■■3■3■"
FS 3040 CR$(46)="3■3■■■■■<$<8TT■T■■Dp■■"
BS 3050 CR$(68)="■■■■p■■■PP■■■■■■TT■■■■"
FQ 3060 CR$(90)="■■■■■♥♥♥♥♥♥♥♥■■0♥♥♥■♥♥♥"
JW 3070 CR$(112)="♥♥♥♥♥♥♥■♥♥■■■0■e♥8TT■"
HT 3080 CR$(133)="T■♥■■♥(♥■■(■■♥(■((♥■■"
KE 3090 CR$(154)="=■■■■■■♥■■■■■■■♥■■■■■"
DK 3100 CR$(175)="■■■■■■■■■■■■■■■■■■■■"
MI 3110 CR$(196)="■■8<<■■■■■p<<■■■■■■■■"
UK 3120 CR$(217)="■■■■■■■■■■■■■■■■■■■■■"
WF 3130 CR$(238)="■■■■■■>xp8■■■■■■■■■■■■"
JZ 3140 CR$(259)="■■■■■■■■■x■■■■■■■■■■■"
OK 3150 CR$(280)="■■■■■■■♥8\■■Eee■♥■■■■"
WR 3160 CR$(301)="■■■♥8t■■■■■■■♥■■■■♥■■"
UB 3170 CR$(322)="■■■■■■■♥■■■■■■■♥■■■■■■"
UT 3180 CR$(343)="■■♥flxxlf♥♥■♥■♥■■♥■♥■"
YC 3190 CR$(364)="■■■♥■■♥■UUw♥■■♥<ffff<♥"
YG 3200 CR$(385)="♥■ff■■♥■■♥■■■■♥■■♥■ff■"
YG 3210 CR$(406)="lf♥♥<■<■■<♥♥■■■■■■♥■♥"
PQ 3220 CR$(427)="wUU■♥■♥ffff<■♥<z■■■■■"
TB 3230 CR$(448)="<<z■■■■■<♥ff<■■■♥<z■■"
WB 3240 CR$(469)="■■■<♥■■■■■■♥♥e■0■■■♥♥"
DT 3250 CR$(490)="x■■■x♥♥■■6c♥♥♥♥♥♥♥♥♥♥"
MG 3260 CR$(511)="■♥♥6■■>■■♥■■■■■■■■■■■"
BG 3270 CR$(532)="■■■■■■■■xx♥♥♥♥■■■xx■■■"
FI 3280 CR$(553)="♥♥♥xx■■■■■■■8p■■■■p8■"
PX 3290 CR$(574)="■■■■■■■?■■♥♥♥♥♥■■■■■♥■"
ZA 3300 CR$(595)="■■x■■■■■■■■♥♥♥♥PPPP♥♥♥"
OM 3310 CR$(616)="♥■■♥♥♥♥♥♥♥♥♥♥♥♥♥■■♥♥♥♥"
LH 3320 CR$(637)="PPPP♥■■ww■■♥♥♥♥■■■■■♥"
UQ 3330 CR$(658)="♥♥■■♥♥♥♥■■■■■■■■♥♥<■■■"
RF 3340 CR$(679)="<♥♥♥♥♥■■■■■eeeeeeeeee♥♥♥"
CT 3350 CR$(700)="■■■■■■■■■■♥♥♥PPPPPPPPP"
YD 3360 CR$(721)="■■■■■♥♥♥81■■■DJe■♥■<ff"
GL 3370 CR$(742)="■f♥8\■■Jee■♥<f■■f<♥♥■"
LM 3380 CR$(763)="■■■■♥♥♥■<■■<■♥■■■■■■■"
LX 3390 CR$(784)="■<Z■■■$$$■'■■■■■■■■■B<"
JT 3400 CR$(805)="Z■■■■■PP■■■■((((■■■■"
UC 3410 CR$(826)="■■■■■■■<■■■■■■■<■Z■■■"
VC 3420 CR$(847)="■■BB<■<f■■(■■■■(♥♥■■■"
SS 3430 CR$(868)="■■>■>888■8■■■epP■8■■■"
ZS 3440 CR$(889)="<■■■■99♥D8T(8■■(P♥ ■p"
XO 3450 CR$(910)="♥♥♥■■!I■$H■■■^■■>■88T"
QJ 3460 CR$(931)="■■B♥♥♥■■(■■■(1■1z■>■9"
TG 3470 CR$(952)="■■■■■■■■■81■■■DDD■8t■■"
JJ 3480 CR$(973)="DDS■8t■■■DS■■♥■<■■■<♥■"
WN 3490 CR$(994)="■■■■■■■♥■x■nf■♥■■■■■■■"
CU 3500 CR$(1015)="■■♥TTTTTT♥"
BH 4000 X=USR(ADR(MM$),ADR(CR$),CA,1023)
AF 4010 RETURN
```

LISTING 2

```
AG 10 REM HAUNTED HOUSE, PART 4
EG 20 REM BY ROBIN ALAN SHERER
FW 30 REM (c) 1985, ANTIC PUBLISHING
PA 35 REM (CREATES LINES 20 AND 3020-3500
   )
CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
WO 70 FN$="D:LINES.LST":REM THIS IS THE N
   AME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "     ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")       "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "■TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CZ 180 IF C<LN+1 THEN ? :? "■TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? "■COMPLETED■
   "
```

```
KP 1000 DATA 1915
MS 1010 DATA 0500480320680730770320770770
   360400520490410580770770360610341041O4
   13320710413320610413320910 4
SC 1020 DATA 1332081041701602551382080021
   0416817720614520813619225520824723020 7
   23020920222425520823309603 4
VK 1030 DATA 1550510480500480320670820360
   4004904106103400000000000000000000000 0
   02402406006012625521902400 0
KT 1040 DATA 0000000000000000000341550510
   4805104803206708203604005005204106103 4
   00012419814618616218215619 2
IW 1050 DATA 2161400141592491120490272040
   5120405120403415505104805204803206708 2
   03604005205404106103405120 4
VJ 1060 DATA 0511262552552191260600360600
   5608408417008414600006811215214003415 5
   05104805304803206708203604 0
TI 1070 DATA 0540560410610340050050121521
   1200713719208008019213700719814600008 4
   08401613019800003415505104 8
NH 1080 DATA 0540480320670820360400570480
   4106103402402412602402400000000000000 0
   00000002402404800000000012 6
IA 1090 DATA 0000000000341550510480550480
   3206708203604004904905004106103400000 0
   00000000000002402400000000 6
GH 1100 DATA 0120240480960640000560840841
   7003415505104805604803206708203604004 9
   05105104106103408414600019 8
HK 1110 DATA 1980000400001701300401981300
   0004017004004000013016103415505104805 7
   04803206708203604004905305 2
JT 1120 DATA 0410610340611331331332530012
   5400000300501101101100500300024023221 2
   24413203415505104904804803 2
GM 1130 DATA 0670820360400490550530410610
   3423224000400901101901901701603101620 0
   20013620020000082480010030 07
QJ 1140 DATA 0341550510490490480320670820
   3604004905705404106103401402805606006 0
   12819219222409611206006000 7
DK 1150 DATA 0110230230230110070080341550
   5104905004803206708203604005004905504 1
   06103422420816823200820822 4
NO 1160 DATA 0160090170170170160160310032
   0820020023223203415505104905104803206 7
   08203604005005105604106103 4
YE 1170 DATA 0082481920030030150621201120
   5602419219219219219219224024000900903 4
   15505104905204803206708203 6
CV 1180 DATA 0400500530570410610340170160
   1601603100320020023224812000824819200 3
   00300700700701501503415505 1
IU 1190 DATA 0490530480320670820360400500
   5604804106103401522422419212812819219 2
   00005609225412406906406416 0
AN 1200 DATA 0001260961240341550510490540
   4803206708203604005104804904106103409 6
   09612600005611625412416400 4
RQ 1210 DATA 0040102550001871701702380002
   5525503415505104905504803206708203604 0
   05105005004106103400118916 5
WF 1220 DATA 1652290051890001260240240240
   2412600016118913318916118903415505104 9
   05604803206708203604005105 2
LT 1230 DATA 0510410610341331890001021081
   2012010810200000009609609609612600 0
   25500018703415505104905704 8
PQ 1240 DATA 0320670820360400510540520410
   6103417017023800025525500022108508511 9
   00025500006010210210210206 0
NR 1250 DATA 0000341550510500480480320670
   8203604005105605304106103400012410210 2
   12409609600025500023817017 0
SL 1260 DATA 1870002550001241021021240341
   5505105004904803206708203604005204805 4
   04106103410810200000006009 6
WI 1270 DATA 0600006006000000001260240240
   2402402400025500003415505105005004803 2
   06708203604005205005504106 1
NE 1280 DATA 0341190850852210002550001021
   0210210206002400006012222321619222712 6
   03415505105005104803206708 2
FB 1290 DATA 0360400520520560410610340600
   6012225523824025512606000010210206002 4
   02402400000601222552550341 55
IT 1300 DATA 0510500520480320670820360400
   5205405704106103425525512606000003002 4
   02402402403000000000640960 48
ZU 1310 DATA 0240120060000000341550510500
   5304803206708203604005205704804106103 4
```

continued on next page

```
   12002402402402412000000008
CB 1320 DATA 0280540990000000000000000000
   00000000034155051050054048032067082036
   040053049049041061034255000
MD 1330 DATA 0000541271270620280080000240
   24024031031024024024003003003034155051
   050055048032067082036040053
ZP 1340 DATA 0510500410610340030030030030
   03024024024248248000000000024024024248
   248024024024034155051050056
ZM 1350 DATA 0480320670820360400530530510
   41061034000000000248248024024024003007
   014028056112224192192224112
PH 1360 DATA 0560280341550510500570480320
   67082036040053055052041061034014007003
   001003007015031063127255000
DK 1370 DATA 0000000000150150150151281920
   34155051051048048032067082036040053057
   053041061034224240248252254
JF 1380 DATA 2550150150150150000000000002
   40240240240000000000034155051051049048
   032067082036040054049054041
HY 1390 DATA 0610340002552550000000000000
   00000000000000000000000255255000000000
   000034155051051050048032067
YL 1400 DATA 0820360400540510550410610342
   402402402400000028028119119008028000000
   000000031031024024024000034
CO 1410 DATA 1550510510510480320670820360
   40054053056041061034000000255255000000
   000024024024255255024024024
RC 1420 DATA 0000000601261261260341550510
   51052048032067082036040054055057041061
   034060000000000000000255255
KY 1430 DATA 2552551921921921921921921921
   92000000000034155051051053048032067082
   036040055048048041061034255
SE 1440 DATA 2550240240240240240242552550
   00000000240240240240240240240240034155
   051051054048032067082036040
YS 1450 DATA 0550500490410610340240240240
   3103100000000000056108254124068074064160
   000024060102102034155051051
DA 1460 DATA 0550480320670820360400550520
   50041061034126102000056092254124074064
   064160000060102096096102060
ZK 1470 DATA 0000000240341550510510560480
   32067082036040055054051041061034012126
   012024000000000024060126126
OF 1480 DATA 0600240001262192551650240240
   24034155051051057048032067082036040055
   056052041061034024060090255
RR 1490 DATA 1951260360360360300392552072
   06204031014129129066060034155051052048
   048032067082036040056048053
QY 1500 DATA 0410610340902551951260071371
   92080080192009007016040040040040170170
   130170034155051052049048032
MP 1510 DATA 0670820360400560500540410610
   34170170254254170170170060126126219255
   189195126060126090255255195
AG 1520 DATA 0341550510520500480320670820
   36040056052055041061034195126066066060
   255060102153129040170170170
OV 1530 DATA 17004000000000020140100341550
   51052051048032067082036040056054056041
   061034008028062127062056056
FX 1540 DATA 0560160561242541240641120800
   16056124254124034155051052052048032067
   082036040056056057041061034
DH 1550 DATA 0601262551532552312310000680
   56084040056254124040080000032136112034
   155051052053048032067082036
SA 1560 DATA 0400570490480410610340000000
   00007025033073018036072128252126094254
   126062124056056084034155051
XD 1570 DATA 0520540480320670820360400570
   51049041061034126255066000000000016016
   040124254016040108016049122
JE 1580 DATA 1900622500570341550510520550
   48032067082036040057053050041061034008
   170130130130130130130170056
QZ 1590 DATA 1082541240680680681700561162
   54124034155051052056048032067082036040
   057055051041061034068068164
ES 1600 DATA 0100561162541240681640040100
   00024060126126024060000024034155051052
   057048032067082036040057057
HD 1610 DATA 0520410610340240240240240240
   24024000126120124110102006000255255255
   255255255034155051053048048
OS 1620 DATA 0320670820360400490480490530
   41061034255255000084084084084084084000
   034155
```

LISTING 3

```
GA 10 REM ARTIFACTING DEMO
EG 20 REM BY ROBIN ALAN SHERER
ZB 30 REM (c)1987, ANTIC PUBLISHING INC.
UD 100 GRAPHICS 8+16:COLOR 1
RD 110 SETCOLOR 1,0,14:SETCOLOR 2,0,0
JU 120 FOR X=0 TO 318 STEP 4
WD 130 PLOT X,0:DRAWTO X+1,179:NEXT X
JH 140 FOR X=0 TO 308 STEP 4
DJ 150 PLOT X,0:DRAWTO X+9,179:NEXT X
OZ 160 FOR X=201 TO 319 STEP 2
SS 170 PLOT X,0:DRAWTO X,179:NEXT X
MC 300 GOTO 300
```

dodge those birds or get knocked out of the sky

BE THE EGGMAN

Article on page 35

LISTING 1

Don't type the TYPO II Codes!

```
WL 2 REM BIRD EGGS
UW 4 REM BY WADE MARSHALL
GI 6 REM (c) 1987, ANTIC PUBLISHING
WH 8 DEBUG=(PEEK(53279)=5)
GT 10 GOSUB 5000:GOSUB 10000:GOSUB 11000
ER 20 POKE 19,0:POKE 53278,1:POKE 77,0
DA 30 CHANGE=0
NE 31 PT=1
XN 32 POSITION 6,6:? PATN$(PT+CHANGE,PT+C
   HANGE+17)
UE 35 FLAG=-FLAG
PE 40 A=USR(SHIFT,1750+16*(FLAG<=0),CH+12
   0,16)
AD 50 IF STICK(0)<>15 THEN GR=GR-1:IMAGE=
   1543:SOUND 0,200,8,10:GOTO 65
TW 60 GR=GR+1:IMAGE=1536:SOUND 0,0,0,0
SM 65 A=USR(SHIFT,ADR(BLANK$),PM1023+P0Y,
   7)
FD 70 P0Y=P0Y+GR:A=USR(SHIFT,IMAGE,PM1023
   +P0Y,7)
VI 80 IF PEEK(53252)<>0 THEN 200
EF 100 IF PT<581 THEN PT=PT+20:GOTO 32
NC 101 IF CHANGE<16 THEN CHANGE=CHANGE+4:
   GOTO 31
PY 110 GOTO 30
MD 200 A=USR(SHIFT,ADR(BLANK$),PM1023+P0Y
   ,7):GR=0:POKE 53278,1
VW 205 IF P0Y<41 THEN F=1:P0Y=41:IF EGG=0
    THEN EGG=1:SCORE=SCORE+25:POKE SC+103
   +EGGS,11:POKE 704,24
NS 210 IF P0Y>193 THEN F=1:P0Y=193:IF EGG
   =1 THEN EGG=0:SCORE=SCORE+100+LEVEL*50
```

```
   :EGGS=EGGS+1:POKE 704,54:GOTO 216
NE 215 GOTO 220
OH 216 IF EGGS=3 THEN EGGS=0:LEVEL=LEVEL+1:GOTO 3000
KZ 217 IF EGGS=1 THEN POSITION 18,21:? "*":GOTO 220
DO 218 POSITION 22,21:? "*"
RD 220 IF F=1 THEN F=0:GOTO 100
EL 225 IF DEBUG THEN 100
KR 230 IF EGG=1 THEN EGG=0:POKE SC+103+EGGS,10
BM 235 LIVES=LIVES-1:FOR X=P0Y TO 220 STEP 2:A=USR(SHIFT,1536,PM1023+X,7):SOUND 0,X,10,10
OM 240 A=USR(SHIFT,ADR(BLANK$),PM1023+X,7):NEXT X:POKE 53278,1:SOUND 0,0,0,0:POKE 704,54
MR 250 IF LIVES<1 THEN BONUS=0:GOTO 3000
GY 260 P0Y=193:GOTO 100
GR 1000 FOR X=6 TO 18 STEP 3:POSITION 5,X:? "
   ":NEXT X:BONUS=600+LEVEL*250
IU 1005 IF LEVEL=1 THEN NO1=0:NO2=1:GOTO 1020
RG 1007 IF LEVEL>9 THEN NO1=3:NO2=1:GOTO 1020
FF 1010 NO1=INT((LEVEL-1)/3):NO2=LEVEL-NO1*3
WF 1020 ON NO2 GOTO 1022,1024,1026
AG 1022 FOR X=6 TO 18 STEP 3:POSITION 16,X:? WAVE$(1+NO1*10,10+NO1*10):NEXT X
AR 1023 RETURN
FA 1024 GOSUB 11700
DS 1025 POSITION 16,18:? WAVE$(11+NO1*10,20+NO1*10):RETURN
FW 1026 GOSUB 11800
QG 1027 POSITION 16,15:? WAVE$(1+NO1*10,10+NO1*10):RETURN
AB 1100 RETURN
GN 3000 TIME=PEEK(19):POKE 53277,0
FV 3010 GRAPHICS 1+16:POSITION 0,5:? #6;"bird eggs scoresheet":SOUND 0,0,0,0
YM 3011 POSITION 0,8:? #6;"lives ";LIVES:POSITION 0,1
QE 3020 POSITION 0,10:? #6;"level ";LEVEL:POSITION 0,15:? #6;"TOTAL SCORE ";SCORE
FA 3021 IF LIVES<1 THEN 4000
QI 3022 POSITION 0,12:? #6;"time bonus"
VU 3025 BONUS=BONUS-TIME*50:IF BONUS<0 THEN BONUS=0:GOTO 3045
SD 3030 I=5^2:FOR X=BONUS TO 0 STEP -10:SOUND 0,200,8,10:I=1^2:SOUND 0,0,0,0:I=1^1
LW 3040 POSITION 15,12:? #6;X;"  ":SCORE=SCORE+10:POSITION 15,15:? #6;SCORE:NEXT X
JE 3045 REM
SY 3050 FOR X=1 TO 500:NEXT X
GI 3100 GOSUB 5000:GOSUB 1000:GOSUB 11010:GOTO 20
BK 4000 LEVEL=1:SCORE=0:EGG=0:EGGS=0:GR=0:LIVES=5
VM 4005 POSITION 0,20:? #6;"     GAME OVER":? #6:? #6;"     PRESS start"
VT 4010 IF PEEK(53279)=6 THEN GOSUB 5000:GOSUB 1000:GOSUB 11010:GOTO 20
OR 4020 GOTO 4010
SW 5000 GRAPHICS 0:DL=PEEK(560)+256*PEEK(561)+4:FOR I=2 TO 24:POKE DL+I,4:NEXT I:POKE DL-1,68
RG 5005 FLAG=1:SC=PEEK(88)+256*PEEK(89):EGG=0:EGGS=0
ML 5007 POKE 708,15:POKE 709,216:POKE 710,8:POKE 712,112
VU 5010 CHBAS=120:CH=CHBAS*256
LA 5015 IF LEVEL<>0 THEN 5030
SW 5017 LEVEL=1:SCORE=0:LIVES=5
YG 5020 FOR X=24 TO 24+95:READ A:POKE CH+X,A:NEXT X
JW 5023 FOR X=0 TO 7:POKE CH+X,0:NEXT X
EE 5025 FOR X=0 TO 31:READ A:POKE 1750+X,A:NEXT X
OM 5027 SHIFT=ADR("hh 9h Ph Uh Th 0h n  1 PrTfTP fUfPP f9FnPJFO f ")
YK 5028 POKE 756,CHBAS:GOSUB 8000
BC 5030 POKE 756,CHBAS:? "K"
JD 5040 ? "##&##########################################"
ZS 5050 ? "####          ('                    -('
        ------"
JF 5060 ? "####                         )***,('-
           ---"
UO 5070 ? "##$                      --('
         -"
LW 5080 ? "##$"
XK 5090 ? "##.":? "##.":? "##%":? "##%"
SE 5095 FOR X=9 TO 20:POKE 84,X:? "##":NEXT X
AU 5097 POSITION 3,11:? "##########--":POSITION 3,12:? "# - ('  --":POSITION 2,21
OP 5100 POKE 752,1
DK 5105 ? "##.":? "##.                ###":? "###           ######"
BG 5190 RETURN
LQ 6000 DATA 255,255,255,255,255,255,255,255
MV 6010 DATA 252,252,252,252,252,252,252,252
LG 6020 DATA 192,192,192,192,192,192,192,192
TW 6030 DATA 3,3,15,15,63,63,255,255
YR 6040 DATA 131,15,60,242,0,0,8,0
KF 6045 DATA 0,0,0,32,131,15,60,240
GI 6050 DATA 192,192,240,48,48,60,12,15
JN 6060 DATA 0,0,0,16,84,84,255,255
TP 6070 DATA 0,0,0,0,0,0,255,255
LY 6080 DATA 3,3,15,12,60,48,240,192
LR 6100 DATA 128,128,8,8,32,32,2,2
OH 6110 DATA 240,240,240,240,240,240,240,240
AI 6120 DATA 0,240,12,13,0,0,0,0
GJ 6130 DATA 0,15,48,112,0,0,0,0
EX 6140 DATA 0,0,60,193,0,0,0,0
FQ 6150 DATA 0,0,60,67,0,0,0,0
OF 8000 ? "K":POKE 82,0:POKE 756,CHBAS:?
UJ 8010 ? "/0/0/0    /0/0/0   /0/0/0   /0/0/0    "
DH 8020 ? "/0    /0    /0    /0    /0  /0    /0    "
ZM 8030 ? "/0    /0    /0    /0    /0  /0       /0"
SB 8040 ? "/0/0/0       /0    /0/0/0  /0       /0"
DQ 8050 ? "/0    /0    /0    /0  /0  /0       /0"
DT 8060 ? "/0    /0    /0    /0    /0  /0    /0    "
JK 8070 ? "/0/0/0    /0/0/0  /0    /0  /0/0/0/0    "
OK 8080 ?
YL 8090 ? "/0/0/0/0  /0/0/0/0  /0/0/0/0/0/0/0/0/0"
XT 8100 ? "/0          /0    /0  /0    /0/0       /0"
SF 8110 ? "/0          /0          /0/0          "
VN 8120 ? "/0/0/0     /0  /0/0  /0  /0/0/0/0/0/0/0"
EB 8130 ? "/0          /0    /0  /0    /0       /0"
YF 8140 ? "/0          /0    /0  /0    /0/0       /0"
MD 8150 ? "/0/0/0/0  /0/0/0/0  /0/0/0/0/0/0/0/0/0":? :? :?
ZH 8155 ? "/0  /0 /0/0/0 /0/0/0":? "/0/0/0  /0      /0":? "/0   /0 /0/0/0     /0"
RM 8156 POSITION 20,19:? "### ### ### ## ###":POSITION 20,20:? "#     #  # # # #  #"
QV 8157 POSITION 20,21:? "###  #  ### ## #"
RT 8158 POSITION 20,22:? "  #  #  # # # # #":POSITION 20,23:? "###  #  # # # # #"
ZF 8160 X=0
LM 8161 IF PEEK(53279)=6 THEN 8190
RT 8162 X=X+1:IF X<10 THEN 8161
JU 8170 FLAG=-FLAG
SI 8180 A=USR(SHIFT,1750+(FLAG<=0)*16,CH+120,16)
VQ 8189 GOTO 8160
MT 8190 POKE 82,2
AK 8200 RETURN
XP 10000 DIM PATN$(621),WAVE$(40),A$(1),BLANK$(255)
MG 10010 WAVE$="     /0        /0/0/0   /0   /0 /0/0/0/0/0"
EO 10020 GOSUB 1000
IO 10050 POKE 77,128:RESTORE 10600:FOR X=1 TO 617 STEP 4:READ A$:IF A$="D" THEN PATN$(X)="←↓↓↓":GOTO 10070
EI 10060 PATN$(X)="→↓↓↓"
NJ 10070 NEXT X
DM 10500 RETURN
ZL 10600 DATA D,I,D,I,I,D,I,D,I,I,D,I,D,I,I,D,I,D,I,D,I,D,D,I,I
```

continued on next page

```
AJ 10610 DATA D,I,D,I,I,D,I,D,I,I,D,I,I,D
   ,D,D,I,I,D,I,I,D,I,D,I
YV 10620 DATA D,I,I,D,I,D,I,I,D,D,D,I,I,D
   ,D,D,I,I,D,D,I,D,I,D,D
UX 10630 DATA I,D,I,D,I,I,D,I,D,I,I,D,I,D
   ,I,I,D,I,D,I,D,I,I,D,D
FH 10640 DATA I,D,I,D,D,I,D,D,I,D,I,D,D,I
   ,D,I,D,D,I,I,D,I,D,I,D
DN 10650 DATA I,D,D,I,D,I,D,D,I,D,I,D,D,I
   ,I,I,D,I,D,D,D,I,D,I,D
GL 10660 DATA D,I,D,I,I:REM OVERFLOW
XP 11000 RT=PEEK(106)-16:PMMEM=RT*256:POK
   E 704,54:POKE 53256,0:POKE 54279,RT:P0
   X=128:PM1023=PMMEM+1023
JO 11010 P0Y=193:BLANK$(1)="■":BLANK$(255
   )=BLANK$:BLANK$(2)=BLANK$
DB 11015 RESTORE 11600:A=USR(SHIFT,ADR(BL
   ANK$),PM1023,255)
NB 11020 FOR X=1536 TO 1549:READ A:POKE X
   ,A:NEXT X
ST 11030 POKE 559,62:POKE 53277,3:POKE 53
   248,P0X
DO 11500 RETURN
DA 11600 DATA 114,63,247,50,48,80,80,114,
   63,114,242,48,82,85
QU 11700 FOR X=9 TO 15 STEP 3:POSITION 16
   ,X:? WAVE$(1+NO1*10,10+NO1*10):NEXT X
JX 11710 POSITION 16,6:? WAVE$(11+NO1*10,
   20+NO1*10):RETURN
SZ 11800 FOR X=6 TO 18 STEP 6:POSITION 16
   ,X:? WAVE$(11+NO1*10,20+NO1*10):NEXT X

AQ 11810 POSITION 16,9:? WAVE$(1+NO1*10,1
   0+NO1*10):RETURN
```

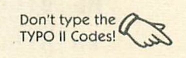
LISTING 2

```
IZ 10 REM BIRD EGGS
AE 20 REM BY WADE MARSHALL
FW 30 REM (c) 1985, ANTIC PUBLISHING
LQ 35 REM (CREATES LINE 5027 FOR BIRDEGGS
   .BAS)
CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
WO 70 FN$="D:LINES.LST":REM THIS IS THE N
   AME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "      ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")      "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "◘TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CZ 180 IF C<LN+1 THEN ? :? "◘TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? "■COMPLETED■
   "
JV 1000 DATA 65
AB 1010 DATA 053048050055032083072073070O
   840610650680820400341041041332411O4133
   24010413321310413321210413З
IB 1020 DATA 239104133238160000177240145Z
   122302122080022302132302402080022302４1
   198238208234198239016230096
SE 1030 DATA 034041155
```

turbo update of 1982 antic classic Article on page 15

ATTACK ON THE DOOMSTAR

LISTING 1




```
KX 5 REM DOOMSTAR
AX 8 REM BY DAVE PLOTKIN
OI 9 REM (c)1987, ANTIC PUBLISHING INC.
AW 10 GOSUB 1500:SCORE=0:SD=1200:B=0:HISC
   ORE=0:F=1:F1=1:GOSUB 800
JD 90 COL=PEEK(708):POKE 708,PEEK(709):PO
   KE 709,PEEK(710):POKE 710,COL
SS 100 ST=PEEK(632):IF ((NUMH=RT AND ST=1
   3) OR (NUMH=RT+4 AND ST=14)) THEN ST=1
   5:GOTO 130
EQ 110 NUML=NUML+20*(ST=14)-20*(ST=13):NU
   MH=NUMH+(NUML>255)-(NUML<0):NUML=NUML+
   256*(NUML<0)-256*(NUML>255)
CX 120 POKE DL4,NUML:POKE DL5,NUMH:NN=2*(
   ST=13)-2*(ST=14):N=N+NN:Y3=Y3+NN
IA 130 YTEMP=Y:IF SIZEL=0 THEN 175
JT 140 IF SIZEL>1 THEN SIZEL=SIZEL-1:Y=70
   *(SIZEL=2)+56*(SIZEL=1):SH=68*(SIZEL=2
   )+76*(SIZEL=1):GOTO 180
HY 150 IF ABS(Y-Y2-7)<5 AND ABS(X-X2)<4 T
   HEN SOUND 1,40,8,8:POKE 656,0:POKE 657
   ,1:SCORE=SCORE+10:? SCORE:SIZEC=1.9
TN 160 IF  NOT (ABS(Y3-Y)<3 AND SIZEH<>0)
    THEN 170
AJ 164 POKE 707,82:SOUND 2,100,8,10:B=B+1
   :POKE 656,0:POKE 657,15:? B:FOR W=1 TO
    100:NEXT W:IF B=5 THEN 700
YA 170 SH=84:SOUND 2,0,0,0:SIZEL=0:Y=55
CR 175 IF STRIG(0)=0 THEN SIZEL=3:Y=88:SO
   UND 2,10,8,8:SH=60
OD 180 IF (SIZEC=0 AND INT((30-5*B)*RND(0
   ))=0) THEN SIZEC=2:Y2=28:X2=120
KH 190 IF SIZEC=0 THEN 280
EU 200 IF SIZEC=2 THEN 210
RH 202 SIZEC=SIZEC-0.1:Y2=Y2-2:X2=X2+5:PO
   KE 53250,X2:F=F+1:IF F>4 THEN F=1
KV 205 SH2=27*(F=1)+188*(F=2)+200*(F=3)+2
   12*(F=4):SOUND 1,X2-120,10,10:IF SIZEC
   <>0 AND SIZEC<>1.8 THEN 240
KY 207 SH2=BLANK:SOUND 1,0,0,0:GOTO 240
CW 210 XX=RND(0):Y2=Y2+2*(Y2<78)*(ST=13)-
   2*(ST=14)*(Y2>20)+4*(XX>0.8)*(Y2<78)-4
   *(XX<0.12)*(Y2>20)
VL 220 FF=FF+2*(X2<112)-2*(X2>130):X2=X2+
   FF:POKE 53250,X2:SH2=20*(Y2<65 AND Y2>
   43)+40*(Y2<=43)
LT 225 IF (SIZEC=1.8 OR SIZEC=0) THEN SH2
   =BLANK:SOUND 1,40*(SIZEC=1.8),8,8*(SIZ
   EC=1.8)
AJ 230 IF (SM=0 AND INT(RND(0)*(16-2*B))=
   0) THEN Y1=Y2:X1=X2-4:POKE 53249,X1:SM
   =1:SOUND 3,150,8,6
ZX 240 IF SM=0 THEN 280
AX 250 Y1=Y1+2*(ST=13)*(Y1<78)-2*(ST=14):
   SM=SM+0.25*LV
QD 255 SH1=BLANK*(SM=4)+128*(SM<4 AND SM>
   =3)+148*(SM<3 AND SM>=2)+168*(SM<2)
AD 260 IF SM<>4 THEN 265
DN 262 SOUND 3,0,0,0:IF  NOT ((Y1>40-5*(L
   V=1) AND Y1<60+5*(LV=1))) THEN 265
WO 263 SOUND 3,100,8,8:POKE 712,92:SD=SD-
   100*LV:FOR Q=1 TO 50:NEXT Q
```

```
EO 265 IF SM=4 THEN SM=0:POKE 656,0:POKE
   657,8:? SD;"   ":POKE 712,0:SOUND 3,0,0
   ,0
RZ 270 IF SD<0 THEN SD=0:POKE 656,0:POKE
   657,8:? SD;"   ":GOTO 600
EW 280 F1=F1+1:IF F1=4 THEN F1=1
DD 282 SH4=224*(F1=1)+232*(F1=2)+240*(F1=
   3)
IW 285 IF SIZEH=0 THEN 320
SU 290 IF SIZEH<1 THEN SIZEH=SIZEH+0.05:S
   OUND 0,20*SIZEH,10,6:GOTO 400
KT 300 IF SIZEH=1 THEN Y3=34+N:SH3=372:SI
   ZEH=2:SOUND 0,10,8,3:X4=X4+4*LV:FOR Q=
   0 TO 3:POKE 53252+Q,X4-4*Q:NEXT Q
SA 305 IF Y3>85 THEN SH3=BLANK:SIZEH=0:GO
   TO 400+200*(X4>=132)
IW 310 Y3=Y3+3:SH3=92*(Y3-N>=75)+104*(Y3-
   N>46 AND Y3-N<75)+116*(Y3-N<=46)
ZR 320 IF PEEK(19)>=10 THEN POKE 19,0:SIZ
   EH=0.1:POKE 707,196
TF 400 IF YTEMP<>Y THEN D=USR(ADR(E$),P0+
   YTEMP,PB+BLANK):D=USR(ADR(E$),P0+Y,PB+
   SH)
SE 410 D=USR(ADR(E$)+50-25*(SIZEC<1.8),P2
   +Y2,PB+SH2):D=USR(ADR(E$)+50,P1+Y1,PB+
   SH1)
SP 420 D=USR(ADR(E$)+25,P3+Y3,PB+SH3):D=U
   SR(ADR(E$),P4,PB+SH4):GOTO 90
NC 600 D=USR(ADR(E$),P0+YTEMP,PB+BLANK):D
   =USR(ADR(E$)+50,P2+Y2,PB+BLANK)
YH 602 D=USR(ADR(E$)+50,P1+Y1,PB+BLANK):D
   =USR(ADR(E$)+25,P3+Y3,PB+BLANK)
ZW 605 IF SD>0 THEN 616
QU 610 FOR W=1 TO 50:POKE 708,RND(0)*255:
   POKE 709,RND(0)*255:POKE 710,RND(0)*25
   5
PO 615 SOUND INT(RND(0)*4),RND(0)*255,8,8
   :NEXT W
XP 616 NUML=PEEK(DL4):NUMH=PEEK(DL5)
RW 620 IF NUMH-RT>=4 THEN 635
BF 625 NUML=NUML+20:NUMH=NUMH+(NUML>255):
   NUML=NUML-256*(NUML>255)
WH 630 POKE DL4,NUML:POKE DL5,NUMH:GOTO 6
   20
BQ 635 FOR W=120 TO 1 STEP -1:SOUND 0,100
   ,8,W/10:NEXT W
EE 640 SOUND 0,0,0,0:SOUND 1,0,0,0:SOUND
   2,0,0,0:SOUND 3,0,0,0
ZU 645 POKE 708,232:POKE 709,250:POKE 710
   ,132:POKE 712,0:POKE 704,90
HR 650 FOR XNEW=X4 TO 132:FOR Q=0 TO 3:PO
   KE 53252+Q,XNEW-4*Q:NEXT Q:NEXT XNEW
SI 655 FOR C=10 TO 100 STEP 10:FOR Y=30 T
   O 13 STEP -1:D=USR(ADR(E$),P0+Y,PB+13)
   :SOUND 1,Y,6,8:NEXT Y
WW 657 POKE P4+INT(RND(0)*8),PEEK(53770)
AH 660 SOUND 0,120-C,8,8:POKE 711,C:FOR W
   =1 TO 75:NEXT W:NEXT C:SOUND 1,0,0,0
QJ 665 D=USR(ADR(E$),P0+13,PB+BLANK)
UP 670 POKE 623,1:POKE 712,14:SOUND 0,140
   ,8,8:FOR N=14 TO 0 STEP -1:SOUND 0,140
   -N*10,8,8:POKE 712,N
XB 673 FOR NN=1 TO 30:NEXT NN:XN=XN+8:POK
   E 53252,132+XN:POKE 53255,120-XN:NEXT
   N:XN=0
KI 677 FOR N=14 TO 0 STEP -1:SOUND 0,140-
   N*10,8,8:POKE 712,N:FOR NN=1 TO 30:NEX
   T NN:XN=XN+8
GY 680 POKE 53253,128+XN:POKE 53254,124-X
   N:NEXT N:XN=0:FOR W=1 TO 500:NEXT W:PO
   KE 53277,0:GRAPHICS 17
OF 681 POKE 711,36
QK 682 SOUND 0,0,0,0:POSITION 0,2:? #6;"t
   he doomstar":? #6;"has destroyed":? #6
   ;"your home base"
QU 683 ? #6:? #6:? #6;"   YOU lost!!!!":?
   #6
BO 684 IF SCORE>HISCORE THEN HISCORE=SCOR
   E
BG 685 ? #6:? #6;"   FINAL SCORE ";SCORE:?
   #6;"         points":? #6;" PRESS FIRE B
   UTTON":? #6;"    TO PLAY AGAIN"
QI 686 ? #6;"    HIGH SCORE ";HISCORE
NA 687 IF STRIG(0)=1 THEN 687
UX 690 B=0:SCORE=0:SD=1200:F=1:F1=1:GOSUB
    836:GOTO 90
ND 700 D=USR(ADR(E$),P0+YTEMP,PB+BLANK):D
   =USR(ADR(E$)+50,P2+Y2,PB+BLANK)
YF 701 D=USR(ADR(E$)+50,P1+Y1,PB+BLANK):D
   =USR(ADR(E$)+25,P3+Y3,PB+BLANK)
JC 703 SOUND 1,0,0,0:SOUND 2,0,0,0:SOUND
   3,0,0,0
XP 705 NUML=PEEK(DL4):NUMH=PEEK(DL5):FOR
   W=1 TO 10:IND=40*(W/2=INT(W/2))-40*(W/
   2<>INT(W/2))
JA 710 NUML=NUML+IND:NUMH=NUMH+(NUML>255)
   -(NUML<0):NUML=NUML-256*(NUML>255)+256
   *(NUML<0)
YY 715 SOUND 0,W*20,8,8:POKE DL4,NUML:POK
   E DL5,NUMH
XO 720 FOR M=1 TO 100:NEXT M:NEXT W:D=USR
   (ADR(E$),PB+394,PB+BLANK):POKE 53277,0
   :BYT=7:LIN=23
PY 725 D$(1)="♥♥♥▄♥♥♥♥♥♥HjP♥♥♥♥[]?Z♥♥♥♥♥kUZe
   ♥♥H=j_█♥♥♥/U?Zd♥♥♥EkUZy♥♥♥mU^y♥♥m5DW<e♥m
   5X<e H6WDUg9XH4R"
QZ 726 D$(81)="X!GXH6WDUg9X♥m5X<e♥m5DW<e♥
   EmU^y♥♥♥EkUZy♥♥♥/U?Zd♥♥♥H=j_X♥♥♥kUZe♥♥♥[]?
   Z♥♥♥♥HjP♥♥♥♥♥♥▄♥♥"
DX 727 D$(161)="♥":POKE DL4,0:POKE DL5,RT
   +1:STRT=256*(RT+1)+10*20+6:D=USR(PICT,
   STRT,ADR(D$),BYT,LIN,20)
ZK 728 FOR N=1 TO 150:NEXT N
XO 730 FOR NN=1 TO 200:SOUND 0,NN,8,14:SO
   UND 1,NN+10,8,14:POKE 712,14-NN/15:NEX
   T NN:FOR NN=1 TO 36:COL=PEEK(708)
NX 732 POKE 708,PEEK(709):POKE 709,PEEK(7
   10):POKE 710,COL:SOUND 0,NN*6,8,14:SOU
   ND 1,NN*5,8,14
FC 735 FOR MM=1 TO 15:NEXT MM:NEXT NN:POK
   E 712,0
KR 736 FOR Q=0 TO 2:FOR N=14 TO 0 STEP -1
   :POKE 708+Q,N:SOUND 0,140-10*N,8,14
IL 740 SOUND 1,152-10*N,8,14:FOR NN=1 TO
   30:NEXT NN:NEXT N:FOR NN=1 TO 50:NEXT
   NN:NEXT Q
HF 745 FOR N=14 TO 0 STEP -1:SOUND 0,140,
   8,N:SOUND 1,152,8,N:FOR NN=1 TO 30:NEX
   T NN:NEXT N
EO 775 GRAPHICS 17:POSITION 3,3:? #6;"CON
   GRATULATIONS          WARRIOR":? #6;" Y
   OU HAVE DESTROYED":? #6;"         THE"
CY 780 ? #6;"      doomstar":GOTO 684
GY 800 DIM D$(650),E$(80)
YF 805 E$="hhaLhaKhaOhaN♥aINrKHr/PW♥hhaLh
   aKhaOhaN♥aINrKHraPW♥hhaLhaKhaOhaN♥aINr
   KHrPW♥"
CW 810 A=PEEK(106)-20:POKE 54279,A:PB=256
   *A:POKE 53761,168:POKE 53763,168
ER 811 POKE 20,0:FOR A=PB TO PB+247
TF 813 JNK=USR(ADR("hZ♥N♥RIDURDD♥"))
NC 814 READ I:POKE A,I:NEXT A:POKE 709,14
TE 815 DATA 0,0,0,0,0,0,129,129,153,231,2
   31,153,129,129,0,0,0,0,0,0,0,0,0,0,0
   ,0,66,90,102,90,66,0,0,0,0,0,0,0,0
RU 816 DATA 0,0,0,0,0,0,0,0,0,36,60,36,0,0,
   0,0,0,0,0,0,0,24,24,60,60,60,126,255,2
   19,0,24,24,24,60,126,90,0
QZ 820 DATA 0,0,16,16,56,40,0,0,0,0,16,16
   ,124,16,16,0,0,0,0,0,0,24
JH 821 DATA 60,126,255,126,60,24,0,0,0,0,
   0,24,60,126,60,24,0,0
OV 823 DATA 0,0,0,0,0,24,60,24,0,0,0,0,0,
   0,24,60,36,126,189,90,90,165,255,165,9
   0,90,189,102,60,24,0,0
IH 825 DATA 0,0,0,24,36,60,60,90,90,36,36
   ,36,90,90,60,36,24,0,0,0,0,0,0,0,0,0
   ,24,36,24,24,24,36,24,0,0,0,0,0,0
UH 826 DATA 16,32,96,184,42,60,8,16,0,0,0
   ,0,0,62,8,20,20,8,62,0,0,0,0,0,8,4,6,2
   9,84,60,16,8,0,0,0,0
TR 827 DATA 60,24,255,219,255,153,24,60,6
   0,24,255,109,255,153,24,60,60,24,255,1
   82,255,153,24,60
FH 830 POKE 53256,1:POKE 53257,3:POKE 532
   58,1:POKE 53259,1:POKE 53260,85
AE 835 FOR A=PB+384 TO PB+1024:POKE A,0:J
   NK=USR(ADR("hZ♥N♥RIDURDD♥")):NEXT A
   :RT=PEEK(106)-8
KZ 836 POKE 623,17:X=121:X1=X:X2=X:POKE 5
   3248,X:POKE 53250,X:POKE 53251,X
QI 840 POKE 88,0:FOR N=0 TO 8:POKE 89,RT+
   N:? "♥":NEXT N:POKE 106,RT:GRAPHICS 5:
   POKE 559,0
GU 845 SOUND 0,0,0,0:SOUND 1,0,0,0:SOUND
   2,0,0,0
ZA 850 PICT=ADR("hhaLhaKhaNhaMhhaOhhHhhaP
   S0/IMrK/ePW▄KePaKEIFL▄MeOIMIFNJPC♥
   ")
JL 865 POKE 704,98:POKE 705,36:POKE 706,5
   0:POKE 707,196:POKE 708,232:POKE 709,2
   50:POKE 710,132:POKE 711,24
ZW 870 D$(1)="▶▶▶▶▶▶▶▶▶▶▶▶PL▶▶▶▶▶▶▶▶▶▶▶▶XXXXXXX
   XX0▄XXXXXXXXXXXXXUUUUUUUUU0▄UUUUUUUUUU▶▶▶▶▶
   ▶▶▶K0▄▶▶▶▶▶▶▶▶▶▶▶▶▶▶"
JT 871 D$(81)="XXXXXXXXXX-?<zXXXXXXXXXXUUUUUU
   UUmXXyUUUUUUUUUUUUUUUUmUUyUUUUUUUUUU▶▶▶▶
```

continued on next page

```
   [graphics]"
WW 872 D$(161)="[graphics]"
XN 873 D$(241)="[graphics]"
LH 874 D$(321)="[graphics]"
AA 875 D$(401)="[graphics]"
VQ 876 D$(481)="[graphics]"
QY 877 D$(561)="[graphics]"
PB 880 POKE 88,0:POKE 89,RT+1:FOR N=1 TO
   40:COLOR RND(0)*3+1:PLOT RND(0)*79,RND
   (0)*47:NEXT N
LG 885 DL=PEEK(560)+256*PEEK(561):DL4=DL+
   4:DL5=DL+5:NUML=0:NUMH=RT+4:POKE 88,NU
   ML:POKE 89,NUMH
VC 890 STRT=(RT+4)*256+9*20:A=USR(PICT,ST
   RT,ADR(D$),20,31,20):POKE DL4,NUML:POK
   E DL5,NUMH:A=DL
SL 900 DLIC=ADR("H[graphics]4[graphics]Phe"):HI=IN
   T(DLIC/256):LO=DLIC-HI*256:POKE 512,LO
   :POKE 513,HI
LC 910 LBASE=DL-2:POKE LBASE+40+6,PEEK(LB
   ASE+40+6)+128:POKE 54286,192
HR 920 IF PEEK(A)<>66 THEN A=A+1:GOTO 920

RG 930 POKE A,71:POKE A+3,6:POKE A+4,6:PO
   KE A+5,65:POKE A+6,PEEK(A+7):POKE A+7,
   PEEK(A+8)
XZ 940 POKE 656,0:POKE 657,20:? "SCORE SH
   IELDS PORTS"
RK 950 POKE 656,0:POKE 657,1:? SCORE:POKE
    656,0:POKE 657,8:? SD:POKE 656,0:POKE
    657,15:? B
AQ 955 X4=60:FOR N=0 TO 3:POKE 53252+N,X4
   -4*N:NEXT N:D=USR(ADR(E$),PB+384+10,PB
   +224)
VX 960 POKE 53277,3:POKE 559,46:Y=56:D=US
   R(ADR(E$),PB+512+Y,PB+84)
EH 980 SIZEC=0:SM=0:SIZEL=0:N=0:Y3=38:SIZ
   EH=0:FF=1:LV=1:POKE 656,1:POKE 657,0:?
    "BEGINNER"
SX 990 CONSOL=PEEK(53279):IF CONSOL=3 THE
   N LV=1:POKE 656,1:POKE 657,0:? "BEGINN
   ER"
TD 1000 IF CONSOL=5 THEN LV=2:POKE 656,1:
   POKE 657,0:? "EXPERT   "
XP 1010 IF CONSOL=6 THEN 1030
UM 1020 GOTO 990
ZJ 1030 POKE 656,1:POKE 657,0:? "
   "
UO 1040 SOUND 0,10,8,3:P0=PB+512:P1=PB+64
   0:P2=PB+768:P3=PB+896:P4=PB+394:BLANK=
   524
QF 1050 SH=84:SH1=BLANK:SH2=BLANK:SH3=BLA
   NK:RETURN
RX 1500 GRAPHICS 18:POKE 712,48:POSITION
   2,1:? #6;"DOWN THE TRENCH"
MX 1510 POSITION 6,3:? #6;"attack":POSITI
   ON 2,5:? #6;"on the doomstar[graphics]":POSITIO
   N 2,8:? #6;"BY DAVID PLOTKIN"
MB 1520 POSITION 0,9:? #6;"[graphics]
   [graphics]":POSITION 0,10:? #6;"[graphics]c[graphics] antic
   publishing"
VJ 1530 SOUND 2,55,12,8:RETURN
ET 1535 FOR WW=1 TO 5
QI 1540 FOR W=10 TO 100 STEP 2:SOUND 0,W,
   10,8:SOUND 1,110-W,10,8:POKE 708,W:NEX
   T W:NEXT WW
AB 1550 SOUND 2,0,0,0:SOUND 1,0,0,0:SOUND
    0,0,0,0
XC 1560 FOR W=10 TO 255:POKE 710,W:SOUND
   0,W,10,6:NEXT W:SOUND 0,0,0,0:RETURN
```

LISTING 2

```
OD 10 REM DOOMSTAR, LISTING 2
EB 20 REM BY DAVE PLOTKIN
FW 30 REM (c) 1985, ANTIC PUBLISHING
UR 35 REM (CREATES LINES 725,726,805,813,
   835,850 & 900)
CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
WO 70 FN$="D:LINES.LST":REM THIS IS THE N
   AME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "      ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...Plea
   se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")     "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "[graphics]TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CZ 180 IF C<LN+1 THEN ? :? "[graphics]TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? " COMPLETED 
   "
MJ 1000 DATA 569
KC 1010 DATA 055050053032068036040049041O
   610340000000000021000000000000000001106
   080000000000000022191165000
WJ 1020 DATA 000000000107213250064000000O
   011891060951600000000062141911652280OO
   000027107213250121000000027
AI 1030 DATA 109085094121000000109181127O
   871580640001091811701511580640011822I5
   255245231144001052210034155
NW 1040 DATA 055050054032068036040056049O
   410610341701611990160011822152552452 31
   144000109181170151158064000
PF 1050 DATA 109181127087158064000027109O
   850941210000000271072132501210000OOOO6
   214191165228000000001189106
FU 1060 DATA 095144000000000107213250064O
   000000000221911650000000000000001106080
   000000000000000021000000034
ZH 1070 DATA 155056048053032069036061034I
   041041332041041332031041332071041332O6
   160000177206145203200192008
YT 1080 DATA 208247096104104133204104133 2
   031041332071041332061600001772061452O3
   200192012208247096104104133
TM 1090 DATA 204104133203104133207104133 2
   061600001772061452032001920202082470 96
   034155056049051032074078075
GD 1100 DATA 061085083082040065068082040O
   341041650200101410002100732551410022 10
   141197002096034041041155056
HM 1110 DATA 051053032070079082032065061O
   800660430510560520320840790320800660 43
   049048050052058080079075069
EH 1120 DATA 032065044048058074078075061O
   850830820400650680820400341041650200 10
   141000210073255141002210141
BY 1130 DATA 196002096034041041058078069O
   880840320650580820840610800069069075O40
   049048054041045056155056053
QT 1140 DATA 048032080073067084061065068O
   820400341041041332041041332031041332O6
   104133205104104133207104104
QR 1150 DATA 170104104133208164207136177 2
   051452031361922552082470241652031012 08
   133203144002230204024165205
ID 1160 DATA 101207133205144002230206202 2
   082190960340411550570480480320680760 73
   067061065068082040034072141
IK 1170 DATA 010212169052141024208169010 1
   410222081040640340410580720730610730 78
   084040068076073067047050053
KS 1180 DATA 054041058076079061068076073O
   670450720730420500530540580800790750 69
   032053049050044076079058080
GL 1190 DATA 079075069032053049051044072O
   73155
```

PURSUIT OF THE GRAF STRIVIAL

Article on page 52

```
'
'
' STrivia!
' An almost practical application
' (c)1987 Antic Publishing
' Written by Patrick Bass
Let Version$="Wednesday 060387a"
'
' - - - - - - - - - - - - - - - - - -
@Initialize
'
Repeat
  @Open_quiz_file
  '
  If File_found
    @Take_the_quiz
    @Print_results
  Endif
  '
  Cls
  Alert 3,"Take another Quiz?",2,"Yes| No ",Button
  '
  If Button=2
    Let Finished=True
  Endif
  '
Until Finished
Edit
End
'
' -----------------------------------
Procedure Initialize
  '
  Let Medium_resolution=1
  Let High_resolution=2
  '
  Let The_current_resolution=Xbios(4)
  Let Rez=The_current_resolution
  '
  If The_current_resolution<Medium_resolution
    Alert 3,"Please switch to|medium resolution.",1,"Hokay",Button
    System
  Endif
  '
  Let Charw=8
  Let Charh=(8*The_current_resolution)
  '
  Let Question_depth=200
  Let Answer_depth=10
  Let Hint_depth=10
  '
  Let Escape$=Chr$(27)
  Let Bell$=Chr$(7)
  Let Reverse_on$=Escape$+"p"
  Let Reverse_off$=Escape$+"q"
  '
  Dim Header$(Question_depth)
  Dim Question$(Question_depth)
  Dim Answer$(Question_depth)
  Dim Response$(Question_depth)
  Dim Result$(Question_depth)
  '
  Let Finished=False
Return
'
' -----------------------------------
Procedure Open_quiz_file
  '
  Text 30*Charw,3*Charh," Load Quiz Questions "
  Box (29*Charw),(2*Charh),(51*Charw),4*Charh
  Print At(1,5)
  Print "                    "
  Print " You need to load   "
  Print " a file containing  "
  Print "  quiz questions    "
  Print "from the disk into  "
  Print "the computer so you "
  Print " may answer them.   "
  Print "                    "
  Print " Either clickselect "
  Print "  or type in the    "
  Print " filename  of the   "
  Print " file you wish to   "
  Print "       open.        "
  Print "                    "
  Box 0,(6*Charh),(20*Charw),(20*Charh)
  '
  @Prompt_action
  Fileselect "\*.QIZ","",Filename$
  '
  If Exist(Filename$)
    Let File_found=True
    Open "I",#1,Filename$
    '
    Let Index=0
    Repeat
      @Get_line
      If Len(Inline$)>1
        Let Header$(Index)=Inline$
        Inc Index
      Endif
    Until Inline$="*"
    '
    Cls
    @Draw_card
    @Draw_buttons
    Get 0,0,639,199*The_current_resolution,New_page$
    '
    Let Showing_answer=False
    Let Displaying=False
    '
    Repeat
      @Get_line
      If Len(Inline$)>1
        '
        If Instr(Inline$,"how")>0
          Let Showing_answer=True
        Endif
        '
        If Instr(Inline$,"elay")>0
          Let Delay_value=Val(Mid$(Inline$,Instr(Inline$,"elay")+4))
        Endif
        '
        If Instr(Inline$,"isplay")>0
          Let Displaying=True
        Endif
        '
      Endif
    Until Inline$="*"
    '
    @Get_line
    Let Number_of_questions=Val(Inline$)
  Else
    Let File_found=False
    Alert 3,"File not found!",1,"Rats",Button
  Endif
  '
Return
'
' -------------------------------
Procedure Prompt_action
  Let Prompt_offset=61
  '
  Print At(Prompt_offset,16);"                   "
  Print At(Prompt_offset,17);"  Select a file    "
  Print At(Prompt_offset,18);"  and press [ OK ] "
  Print At(Prompt_offset,19);" <----------       "
  Print At(Prompt_offset,20);"  Or press [Cancel]"
  Print At(Prompt_offset,21);"  to abort action. "
  Print At(Prompt_offset,22);"                   "
  Box (Prompt_offset-1)*Charw,(15*Charh),(Prompt_offset+18)*Charw,(22*Charh)
Return
'
' ----------------------------
Procedure Get_line
  Repeat
    Line Input #1,Inline$
    If Left$(Inline$,1)="'" Or Left$(Inline$,1)=";"
      Let Inline$=""
    Endif
  Until Inline$<>""
Return
'
' ----------------------------
Procedure Get_next_question
  '
  Let Question_line=1
  '
  Repeat
    @Get_line
    Let Question$(Question_line)=Inline$
    Inc Question_line
  Until Inline$="*"
  '
  For Answer=1 To 5
    @Get_line
    Let Answer$(Answer)=Inline$
  Next Answer
  '
Return
' ----------------------------
Procedure Take_the_quiz
  '
  Let Test_grand_total=0
  Let Number_correct=0
  Let Number_wrong=0
  '
  For Question=1 To Number_of_questions
    Cls
    Let Base=2
    Let Lbase=7
    '
    @Get_next_question
    @Show_card
    '
    Let Result$(0)=Header$(0)
    Print At(Lbase,Base),Header$(0)
    Print At(Lbase,Base+2);" QUESTION: ";Question
    '
    Let Question_line=1
    While Question$(Question_line)<>"*"
      Print At(Lbase,Base+3+Question_line);" ";Question$(Question_line)
      Inc Question_line
    Wend
    '
    For Answer=1 To 5
      Let Hilite$=Escape$+"q"
      '
      If Left$(Answer$(Answer),1)=">"
        Let Answer$(Answer)=Mid$(Answer$(Answer),2)
        Let Correct_answer=Answer
      Endif
      '
      While Len(Answer$(Answer))<46
        Let Answer$(Answer)=Answer$(Answer)+" "
      Wend
      '
      Print At(Lbase,(Base+4+Question_line+Answer));" ";Answer;": ";
      Print Answer$(Answer);
    Next Answer
    Print
    '
    Let Question_start_time=Timer
    '
```

continued on next page

```
  Let Selected=False
  Let Keypress$=""
  '
  While Not Selected
    Let Keypress$=Inkey$
    If Keypress$>="1" And Keypress$<="5"
      @Find_key_press
    Endif
    If Keypress$=Chr$(13)
      Let Selected=True
    Endif
    '
    Mouse Mx,My,Mk
    If Mk<>0
      @Find_button_press
    Endif
  Wend
  '
  If Answer_selection=Correct_answer
    Let Result$(Question)=" Q:"+Str$(Question)
    Let Result$(Question)=Result$(Question)+" A:"+Str$(Answer_selection)+"  "
    Let Result$(Question)=Result$(Question)+"Correct   "
    Inc Number_correct
    '
    If Showing_answer
      Print Bell$
      For Ding=1 To 5
        Print At(65,3);"Correct!"
        Pause (Delay_value/2)
        Print At(65,3);"          "
        Pause (Delay_value/2)
      Next Ding
    Endif
  Else
    Let Result$(Question)=" Q:"+Str$(Question)
    Let Result$(Question)=Result$(Question)+" A:"+Str$(Answer_selection)+"  "
    Let Result$(Question)=Result$(Question)+"Incorrect "
    Inc Number_wrong
    '
    If Showing_answer
      For Ding=1 To 5
        Print At(65,3);Bell$;"Incorrect!"
        Pause (Delay_value/2)
        Print At(65,3);Bell$;"          "
        Pause (Delay_value/2)
      Next Ding
    Endif
  Endif
  '
  Let Total_question_time=(Timer-Question_start_time)/200
  Let Test_grand_total=(Test_grand_total+Total_question_time)
  Let Result$(Question)=Result$(Question)+Str$(Total_question_time)
  Let Result$(Question)=Result$(Question)+" seconds."
  '
 Next Question
 '
 Close #1
Return
'
' ----------------------------
Procedure Draw_card
  Defline 2
  Box 42,2,460,199*The_current_resolution
  Defline 1
  Box 2,2,500,199*The_current_resolution
  '
  For L=1 To 10
    Circle 22,(L*(20*The_current_resolution)),5
    Circle 480,(L*(20*The_current_resolution)),5
  Next L
  '
Return
'
' ----------------------------
Procedure Show_card
  Put 0,0,New_page$
Return
'
' ----------------------------
Procedure Draw_buttons
  '
  Let Ls=145
  Let Ts=(145*The_current_resolution)
  Let Ts=Ts+2*(The_current_resolution=High_resolution)
  '
  Deffill 0,2,8
  Dpoke Contrl,11
  Dpoke Contrl+2,2
  Dpoke Contrl+10,1
  '
  Dpoke Ptsin,Ls+(Charw*52)+6
  Dpoke Ptsin+2,Ts-30
  Dpoke Ptsin+4,Ls+(Charw*61)+2
  Dpoke Ptsin+6,Ts+Charh*7-2
  Vdisys
  '
  Dpoke Ptsin,Ls+(Charw*45)
  Dpoke Ptsin+2,Ts+(Charh*3)
  Dpoke Ptsin+4,Ls+(Charw*52)+6
  Dpoke Ptsin+6,Ts+Charh*7-2
  Vdisys
  '
  Box Ls+(Charw*52)+6,Ts-30,Ls+(Charw*61)+2,Ts+Charh*7-2
  Box Ls+(Charw*45),Ts+(Charh*3),Ls+(Charw*52)+6,Ts+Charh*7-2
  Color 0
  Line Ls+(Charw*52)+6,Ts+(Charh*3)+1,Ls+(Charw*52)+6,Ts+Charh*7-3
  Color 1
  Text Ls+(Charw*46),Ts+(Charh*4),"Return "
  '
Return
'
' ------------------------------
Procedure Find_button_press
  '
  If Mx>=(Ls+(Charw*45)) And Mx<=(Ls+(Charw*55))
    If My>=(Ts+(Charh*3)) And My<=(Ts+(Charh*7-2))
      Let Selected=True
    Endif
  Endif
  '
  If Mx>=(Ls+(Charw*52)+6) And Mx<=(Ls+(Charw*61)+2)
    If My>=(Ts-30) And My<=(Ts+(Charh*7-2))
      Let Selected=True
    Endif
  Endif
  '
  If My<500
    '
    For B=1 To 5
      Let Bx1=Lbase*Charw
      Let By1=((Base+3+Question_line)*Charh)+(B*Charh)
      Let Bx2=Bx1+(Charw*46)
      Let By2=By1+Charh
      '
      Print At(Lbase,(Base+4+Question_line+B));" ";B;": ";
      Print Answer$(B);
      '
      If Mx>=Bx1 And Mx<=Bx2
        If My>=By1 And My<=By2
          Let Hilite$=Reverse_on$
          Print At(Lbase,(Base+4+Question_line+B));Hilite$;" ";B;": ";
          Print Answer$(B);Reverse_off$
          Let Answer_selection=B
        Endif
      Endif
    Next B
    '
  Endif
  '
Return
'
' ------------------------------
Procedure Find_key_press
  '
  For B=1 To 5
    Print At(Lbase,(Base+4+Question_line+B));" ";B;": ";
    Print Answer$(B);
    '
    If B=Val(Keypress$)
      Let Hilite$=Reverse_on$
      Print At(Lbase,(Base+4+Question_line+B));Hilite$;" ";B;": ";
      Print Answer$(B);Reverse_off$
      Let Answer_selection=B
    Endif
    '
  Next B
Return
'
' ---------------------------------------------
Procedure Print_results
  '
  Open "O",#2,"\results"
  '
  Print #2;" ";Result$(0)
  Print #2
  For I=1 To Number_of_questions
    Print #2;" ";Result$(I)
  Next I
  '
  Print #2
  Print #2;" You got ";Number_correct;" right, and ";Number_wrong;" wrong."
  Print #2;" You answered ";Int((Number_correct/Number_of_questions)*100);
  Print #2," percent of the questions correctly."
  Print #2," Total time for test: ";Test_grand_total;" seconds,";
  Print #2;" averaging ";Int(Test_grand_total/Number_of_questions);
  Print #2;" seconds each."
  '
  Close #2
  '
  If Displaying
    Cls
    Print
    Print " ";Result$(0)
    Print
    For I=1 To Number_of_questions
      Print " ";Result$(I)
    Next I
    '
    Print
    Print " You got ";Number_correct;" right, and ";Number_wrong;" wrong."
    Print " You answered ";Int((Number_correct/Number_of_questions)*100);
    Print " percent of the questions correctly."
    Print " Total time for test: ";Test_grand_total;" seconds,";
    Print " averaging ";Int(Test_grand_total/Number_of_questions);
    Print " seconds each."
    '
    Repeat
    Until Inkey$<>"" Or Mousek
  Endif
Return
```

LISTING 2

```
; The Header Line
Trivia Quiz Number One.
*

; The Command Line
Delay 20.  Show answers.  Display results.
*

; The Number of Questions
3

; Question One
What happened twenty years ago, today?
*

The Summer of Love began.
>Sgt. Pepper taught the band to play.
I can't tell you, but I know it's mine.
Nixon claimed: "I am not a crook."
Nixon resigns.

; Question Two
How many holes does it take
to fill the Albert Hall?
*

Some of the below.
All of the below.
>4000
None of the above.
All of the above.

; Question Three
Where is that stooped and
mealy-coloured old man
I used to call Papa when the
Merry-Go-Round broke down?
*

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544 Second Street
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Don't know.

;end of quiz.
```

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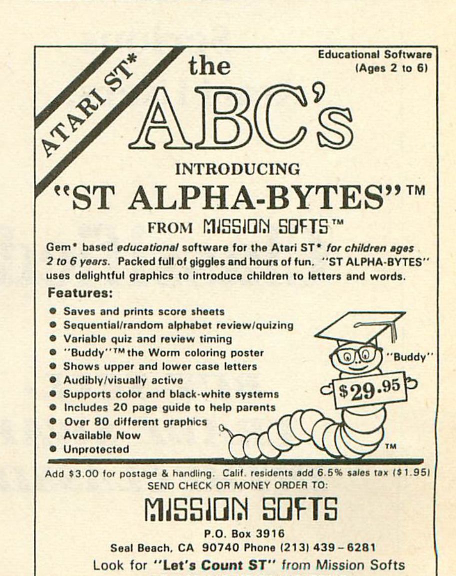
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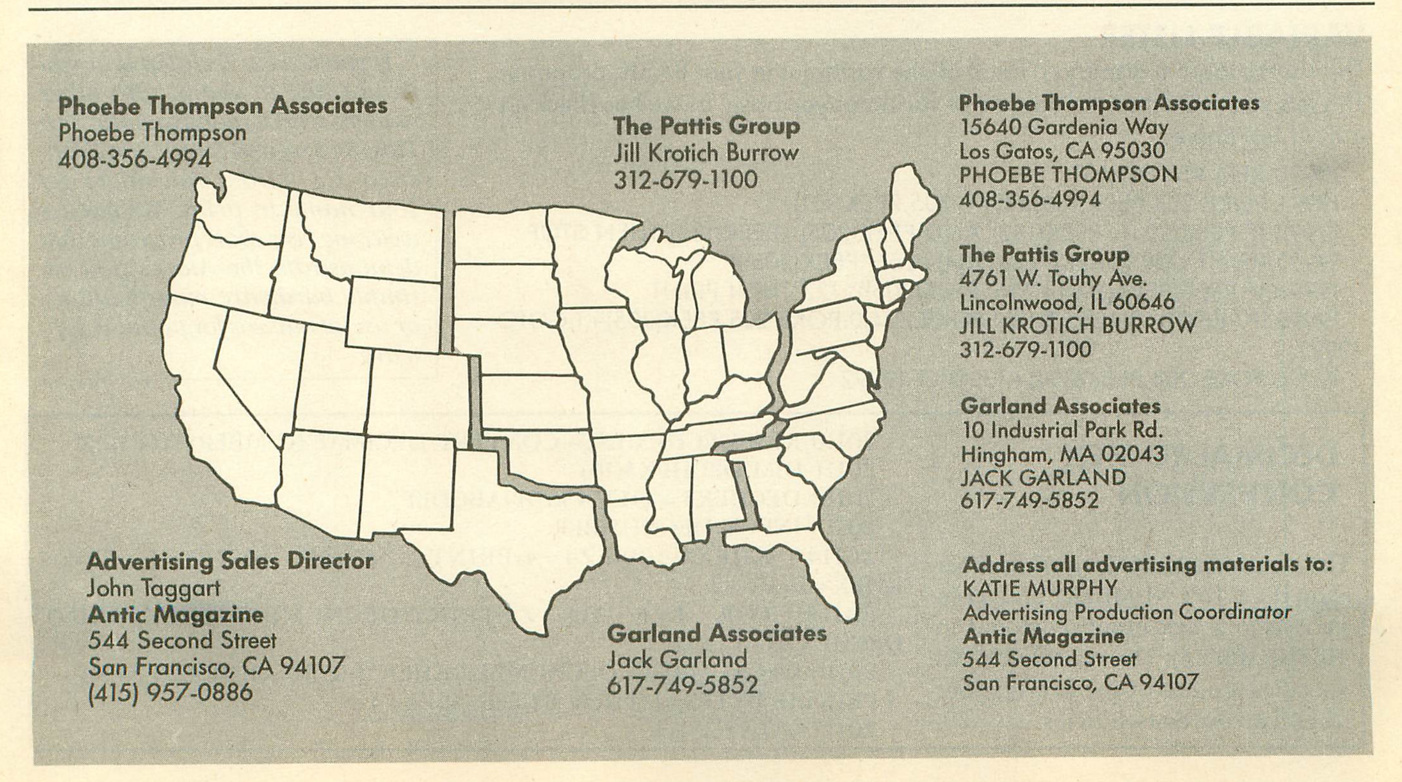
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By Carl Evans

In coming months, many of the short programs featured on these Tech Tips pages will be adapted from Atari BASIC: Faster and Better *by **Antic** Contributing Editor Carl Evans. This excellent collection of powerful BASIC subroutines unfortunately is no longer in print, but we will be publishing the best of it in future issues.*

*All the Tech Tips this month are by Evans. BUT . . . **Antic** still welcomes good short programs sent in by readers for Tech Tips or I/O letters. And we'll still continue to publish the best Tech Tips we find in all the users group newsletters.—* ANTIC ED

HEX-TO-DECIMAL CONVERSION

In many cases it's much more efficient to work with hexadecimal (hex) notation than decimal. In fact, it's almost mandatory if you expect to do much machine language programming. Use the following routine to convert any two-place or four-place (one-byte or two-byte) hex number into decimal by storing your hex number in HEXNUMBER$ and using a GOSUB to HEXDEC.LST. The routine will return the proper decimal number in DECNUMBER.

```
20100 REM HEXDEC.LST—CONVERT HEX NUMBERS TO DECIMAL
20101 DIM HEXDEC$(23),HEXNUMBER$(4)
20102 INPUT HEXNUMBER$
20103 HEXDEC$='ABCDEFGHIJ*******KLMNOP"
20104 REM THIS IS THE MAIN ENTRY POINT
20105 DECNUMBER=0:HEX=LEN(HEXNUMBER$):FOR X=1 TO HEX
20106  DECNUMBER=16*DECNUMBER+ASC(HEXDEC$(ASC(HEX-
NUMBER$(X))-47))-65:NEXT X
20107 PRINT DECNUMBER:GOTO 20102
```

The above routine is particularly useful if your BASIC program requires you to INPUT hex numbers. Just make the input variable a string and store the input in HEXNUMBER$ before calling the HEXDEC routine.

MEMORY BLOCK POINTER

Many different methods are used to reserve a block of memory so that it is protected from modification by BASIC or the operating system. Carl Evans believes that the safest way to do this is to LOAD a small BASIC program that changes the pointers to the bottom of memory and RUN it just before running your main program.

```
19930 REM RESERVE.LST—PROTECTS A BLOCK OF MEMORY
19931 REM SIZE=NUMBER OF BYTES TO RESERVE
19932 ADDRESS=256*PEEK(744)+PEEK(743)+SIZE
19933 MM=INT(ADDRESS/256):LL=ADDRESS-256*MM
19935 POKE 128,LL:POKE 129,MM:REM MOVE LOMEM UP
19936 POKE 8.0:REM RESET WARM START FLAG
19937 X=USR(40960):REM RESTART BASIC
```

VARIABLE LISTER

This short program displays a list of all the variables in your BASIC program. This lets you count the total amount of variables you have, as well as checking any of the names.

```
19990 REM VSHORT.LST
19991 POKE 204,PEEK(130):POKE 205,PEEK(131)
19992 IF PEEK(204)=PEEK(132) AND PEEK(205)=PEEK(133) THEN STOP
19993 PRINT CHR$(PEEK(PEEK(204)+256*PEEK(205)));
19994 IF PEEK(PEEK(204)+256*PEEK(205))>127 THEN PRINT
19995 IF PEEK(204)=255 THEN POKE 204,0:POKE 205,PEEK(205)+1:GOTO
19992
19996 POKE 204,PEEK(204)+1:GOTO 19992
```

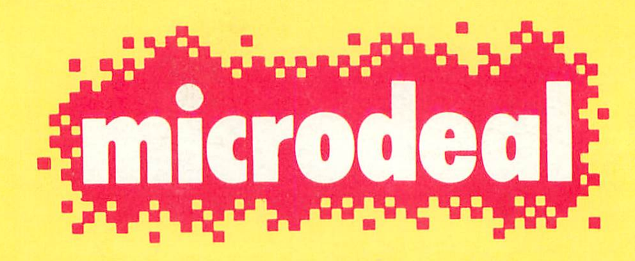
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DECIMAL-TO-HEX CONVERSION

This routine takes a decimal number (stored in DECNUMBER) and converts it to a hex number (stored in HEXNUMBER$). The variable BYTES specifies the size of the hex number as either one or two bytes.

```
20110 REM DECHEX.LST—CONVERT DECIMAL NUMBERS TO HEX
20111 DIM DECHEX$(16)
20112 DECHEX$='0123456789ABCDEF"
20113 INPUT DECNUMBER
20114 KHEX=4096:Z4=4:PRINT "$";:IF BYTES=1 THEN
KHEX=16:Z4=2
20115 FOR I=1 TO Z4:J=INT(DECNUMBER/KHEX):PRINT
DECHEX$(J+1,J+1);
20116 DECNUMBER=DECNUMBER-KHEX*J:KHEX=KHEX/16:NEXT
I:PRINT:IF BYTES=1 THEN BYTES=2:Z4=4
20117 GOTO 20113
```

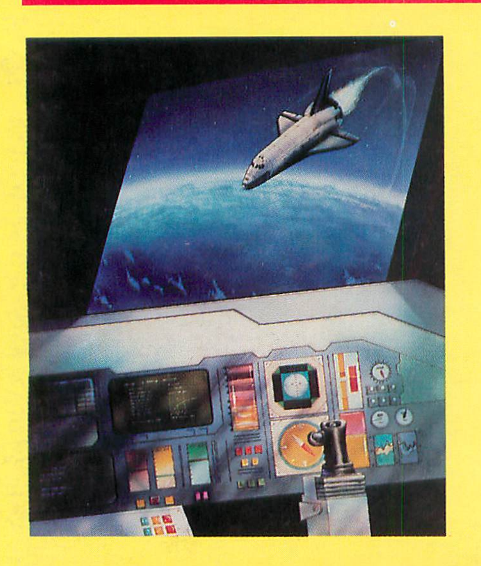
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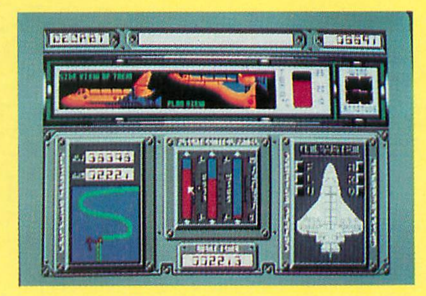
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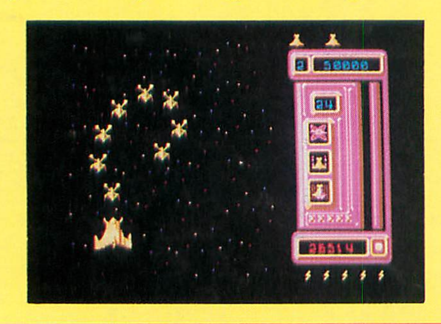


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